THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 10 DECEMBER, 1928 No. 9

Pension Systems for Industrial Workers

Suggestions for Putting a Dependable Pension Plan into Effect

By J. J. BERLINER

Senior Member of The National Accounting Systems, New York

ONE of the most complicated problems which confront industrial employers is the pension system; few of the industrial pension plans in the United States today being so financed that they are likely to remain solvent without refinancing or modification.

In the case of many municipal and other public service pension plans, failure to count the cost carefully has already resulted in bankruptcy of the pension systems, either actual or constructive. Indeed, it is hardly too much to say that the history of pension schemes has been a record of mistakes or failures. Even the elaborate Carnegie Foundation plan had to undergo a radical reorganization only a few years after it was started.

Before taking up the question as to how a pension system should be established, it is imperative to consider whether it is necessary to establish one. Until this has been settled there is little occasion to discuss the question of method.

Broad Object of Pension Systems

Among the more important motives which lead industrial employers to adopt pension systems, the following may be cited:

(a) A desire to provide for the old age of dependent, superannuated employees.

(b) A desire to reward employees who have rendered unusually long service.

(c) A desire to increase efficiency, first, by the elimination of superannuated or incapacitated workers on a humane basis and, second, by stimulating the good will and effort of the active force.

(d) A desire to hold the worker on the job, thereby reducing labor turnover.

(e) A desire to exercise a disciplinary control over workers in respect to strikes and in other ways.

In some pension plans all the motives enumerated above are present; in others, there are only a few.

(a) A large number, perhaps a large proportion, of industrial workers either cannot or do not make adequate provision for their old age. When such workers reach a stage of superannuation, the employer is faced with the alternative of throwing them back on society, with the knowledge that they will become objects of charity, or of himself making some provision for their remaining years. This has been an important and probably the controlling consideration in the establishment of industrial pension systems of the day. From humanitarian motives, the employer is not content to dismiss summarily superannuated workers after long years of service. Moreover, he often hesitates to do this, on the practial ground that such a policy may react unfavorably on the larger body of employees still continuing in the service.

Pensions as a Reward for Long Service

(b) The conception of pensions as a reward for service takes no account of the necessities of the workers, but, ostensibly at least, pensions all alike, whether self-supporting or dependent, who have rendered a given length of service to the establishment or who have fulfilled certain prescribed conditions. Furthermore, it does not necessarily require continuance in service until the employee actually is superannuated. Under many plans, an employee who has begun work at an early age may retire on pension before he can really be termed old if he has served the required number of years.

As a straight reward of service most pension systems are grossly inadequate. The proportion of workers who go on the pension roll usually is only a small fraction of the total force, or even of those remaining with a company for long periods, indeed it is often almost negligible. Moreover, such systems

easily become highly inequitable as between individual workers. An employee who happens to have completed, say, twenty or twenty-five years of service may get a pension, which may be thousands of dollars, while another worker, perhaps more efficient and more faithful, but who has just failed of completing the required period of service, may get absolutely nothing. If long service is entitled to a reward, then it would seem that a system which pays a large benefit for, say, twenty years service, but pays nothing for nineteen years' service, is inherently defective.

A further objection often advanced against the "reward-of-service" idea, as actually operative in many pension plans, is that it may put a premium on inefficiency by keeping men in service, the retirement of whom should be the primary purpose of a pension system. For example, a humane executive may be tempted to retain on his force a worker who needs only one or two more years of service to entitle him to a pension, even though the worker has become distinctly inefficient. Paradoxical as it may seem, a pension system may thus defeat what is perhaps its most important aim. On the other hand, a heartless factory executive may dismiss an efficient man approaching the retirement age, in order to save the company the cost of maintaining him later on pension.

Still again, it has happened that where the cost of pensions was rapidly mounting, the terms of the plan itself have been changed, with the result that many workers have been deprived of the pension benefit to which they had been looking forward.

Means of Increasing Efficiency

(c) This is one of the primary motives which have led to the establishment of pension systems. A pension system, it is urged, tends to relieve the employer of any compunction which he may feel over the dismissal of a worker grown old in his service and now without means, and thus more readily enable him to increase the efficiency of his working force by weeding out those no longer able to perform their allotted tasks. The "drag" of such workers upon production is well known to all industrial executives. It is extremely wasteful to permit superannuated worker to continue at a task where his inefficiency means a lower output not only for himself, but for all others associated with him in the operation. In some cases, notably in work of a "line" character, it is imperative that such a worker shall not be retained, at least in the particular position. Many establishments have endeavored to meet this difficulty by finding other tasks of a lighter or less exacting character, to which such older workers are assigned. But the opportunities of this sort often are far too few to take care of the increasing number of superannuated workers. The employer has, accordingly, resorted to the expedient of a pension system in order to enable him to dismiss such workers without raising any question of injustice or of adverse reaction on the other employees.

Pensions as a means of increasing efficiency of the active force represent one of the primary motives which have led to the establishment of pension systems. In distinction from increasing efficiency through elimination of the superannuated, it is often asserted that pension systems increase the efficiency of the active force. As already pointed out, the very fact that superannuated workers are thus provided for may exert a favorable influence upon the active members of the force and increase their good will, and thus perhaps their efficiency as well. Again, to the extent that a pension system relieves the worker during the stress period of life of anxiety over his declining years, he is, it is urged, in better condition, mentally and physically, to perform his daily tasks.

That pension systems do not materially increase efficiency of the active force was the conclusion reached by the Industrial Bureau of The Merchant's Association of New York, based upon a study of private pension systems made in 1919. Analyzing the replies of fifty-nine employers with respect to the effect on efficiency, the report in question said:

"That failure to produce increased efficiency can be traced to the fact that, in general, pension systems appeal only to employees who have grown old in their present employment. These employees usually constitute a relatively unimportant part of the entire working force and their habits of efficiency, like all other habits, have become more or less fixed."

In any event, the effect of a pension system on the efficiency of the active force will depend largely upon the terms of the plan, partly upon its certainty from the viewpoint of the employee, partly upon his age, That it will not be an important factor in the case of the younger workers is practically certain.

Pensions as a Means of Reducing Labor Turnover

(d) A hope that pension systems might reduce the enormous labor turnover so characteristic of modern industry has undoubtedly been one chief reason for their establishment. Yet on this point it is possible to say with assurance that such systems are disappointing. The testimony of nearly all employers who have introduced pension systems is that the effect upon labor turnover in the case of workers under middle age is small, and often negligible. For workers nearing the retirement age the prospect of a pension apparently is a decided incentive to continuance in the service. But the very fact that workers have remained in a given establishment until such age is of itself evidence that they would be likely to continue if there were no pension system. There is the further practical consideration that the worker past middle age has sufficient inducement to continue merely because of the difficulty involved in

finding a new position. The reluctance of industry to employ men over fifty years of age, or even somewhat under that age, is proverbial.

As to Disciplinary Control

(e) To summarize briefly the preceding discussion, it may be concluded that a private employer is under no compelling moral obligation to provide for the support of his superannuated employees in their old age. Nor can a pension system primarily be regarded as a method of rewarding faithful service, though this purpose may be present. It may further be concluded that the prospect of reducing labor turnover, or of exercising disciplinary control over workers, does not promise results of sufficient importance to warrant the expense of a pension system, while the latter purpose is in many respects inherently objectionable.

It follows, therefore, that the one controlling justification of a pension system from the employer's standpoint is that it will increase efficiency, primarily through elimination of superannuated and incapacitated workers, and possibly by building up a larger amount of goodwill and interest among the active force. Athough some of the other purposes discussed are important, they are incidental to the primary object of increasing efficiency.

While in many cases, it is doubtful whether such efficiency is attained, this failure may be due to imperfections in the plan or to errors in administration. A sound retirement system should facilitate the problem of dismissing superannuated and dependent workers. There may also be some increase in the efficiency of the active force, but the evidence on this point is by no means convincing. To the extent that a pension system does actually increase efficiency it merits most careful consideration.

Increase in efficiency, however, is not in itself a complete justification of a pension system. Not only must a pension system be effective, but it must be inherently sound and equitable, and must not produce consequences injurious to the worker or to society as a whole.

Reasons for Failure of Pension Systems

The reason why industrial pension plans in many instances have not worked out successfully in practice is that executives responsible for their construction have not taken into consideration the fact that the number of employees qualifying for pension during the first years the plans are put into effect is referable to conditions existing at the beginning of the qualification period, say 25 or 30 years previously. The number of pensioners so qualifying is not indicative of the great payroll expansion that has taken place in the meantime.

Initiators of pension plans have frequently overlooked the fact that an increasing number of future pensioners were added to the list of employees each year; maturities will show a considerable annual increase, and if pensions are based upon a percentage of the salaries paid over specified periods, the amount of annual wage will be seen to have invariably increased. The weakness, then, of most industrial pension plans is the neglect to analyze the circumstances thoroughly and to provide for the maturities of additional groups of employees each year. A curve drawn on a chart descriptive of the increase in the amount of pension payments would show sharp elevation after the first few years. This rate of increase is so marked that the management begins to realize that something is radically wrong with their pension policy. A brief study reveals that a continuance on the basis as adopted will become practically impossible. Therefore, the plan must be abandoned or revised.

Experience of Railroad and Industrial Corporations

The actual experiences of two representative American companies over recent years will serve to point out several interesting aspects of the problem. The first illustration is that of the Baltimore and Ohio Railroad Company, which has had a plan in operation since 1884. The actual payments to pensioners have been as follows:

1885.....	$ 7,354	1905.....	$ 73,322
1886.....	18,125	1906.....	82,972
1887.....	20,669	1907.....	95,310
1888.....	23,438	1908.....	112,356
1889.....	24,160	1909.....	129,356
1890.....	25,100	1910.....	157,273
1891.....	27,894	1911.....	174,746
1892.....	22,381	1912.....	193,908
1893.....	31,954	1913.....	212,645
1894.....	34,457	1914.....	234,292
1895.....	34,800	1915.....	266,538
1896.....	34,726	1916.....	295,652
1897.....	46,346	1917.....	312,623
1898.....	50,242	1918.....	321,247
1899.....	52,117	1919.....	331,443
1900.....	49,026	1920.....	352,390
1901.....	55,830	1921.....	380,013
1902.....	63,143	1922.....	407,786
1903.....	64,730	1923.....	435,502
1904.....	67,199	1924.....	456,885

After forty years of operation, there was no evidence that the peak had been reached. In fact, it was almost certain that the annual increase would continue for many years. The number of eligible employees in 1884, at the time the plan began, was 16,848, and the corresponding number of eligible in 1924 was 54,706. The number of pensioners in 1915 was 1,036 or 47 per cent of the 21,722 who were on the eligible list 25 years previously, or in 1890. At the same ratio (4.7 per cent of 54,706 eligible employees in 1924), the number of pensioners in 1949

(twenty-five years after 1924) will be 2,571, which compares with 1,290 on the pension list in 1924.

The second illustration is that of the United States Steel Corporation. This plan has been in operation since 1911 only, and is somewhat affected by a change made in 1915, whereby the age limit was increased from 60 to 65 years, and the service period from 20 to 25 years.

Again, it is clearly evident that constantly increasing pension appropriations will be necessary for a great many years to come. As in the preceding case it is significant that the number of employees on the payroll of the Steel Corporation has grown from 196,000 in 1911 to 249,000 in 1925.

New Pensioners Added

Year	Pensioners	Annual Payment	Years of Service	Monthly Pension
1911	1,606	$281,457	30.55	$20.90
1912	1,843	358,780	29.51	20.40
1913	2,092	422,815	29.84	21.30
1914	2,521	511,967	29.89	21.00
1915	3,002	659,389	29.09	20.85
1916	3,013	711,130	33.23	25.00
1917	2,933	712,506	33.24	22.65
1918	2,861	709,059	34.77	27.35
1919	2,940	733,707	32.31	26.75
1920	2,969	779,766	34.37	34.35
1921	3,437	947,879	34.90	38.60
1922	3,886	1,266,661	35.40	40.65
1923	4,054	1,448,112	34.50	43.25
1924	4,478	1,683,920	35.20	43.80
1925	5,084	2,068,652	35.10	45.10

The Correct Basis for Pension Systems

The reason for failure of numerous pension systems to operate sucessfully and a suggestion for the true bases and correct principles of such plans will be obvious if we isolate the case of a single pensioner, who, we will assume, has been in the employment of a company for 30 years and who has reached the age of 65 years. If an agreement has been negotiated with an insurance company to carry the pension payments after the date of this employee's retirment, the agreement has been worked out by the computation of annuities. In other words, it would be necessary to determine what annual premium must be paid from the date of agreement, say 30 years before the expiration of the pension qualification period fixed by the insurance company after computing the average life expectancy and the compound interest earned by the premiums during 30 years. Now, if the corporation wishes to put into effect a dependable pension plan, it must proceed along the lines exactly analagous to these followed by the insurance company. An amount must be estimated for annual appropriation by way of reverse (corresponding to the premium), which, compounded, will carry the pensioner from the time of his retirement until his death. The most important element contributing to the solution of the problem is the interest. Analysis will demonstrate that for every dollar appropriated by the corporation as reserve, almost two dollars will be earned by compounded interest. This plan has the advantage of flexibility in respect to fluctuations in the payroll, since an increased annual appropriation corresponding to the increase in payroll may be made at any time.

In the case of a large steel company, when the pension plan was adopted, the complete liability for the amount of pension for each employee was set up on the books, though no sinking fund had been set aside to take care of maturing pension obligations. Although the recommendations of pension authorities that such reserves should be established have been considered, the pension committee and the controller agree that this is not essential in view of the very large earnings of the company.

Observations Based on Experience

In view of the general lack of appreciation among the industrial executives of the ultimate cost of pension plans, it may be of interest to offer some observations, based partly upon the limited American experience and partly upon the longer European record.

1—The total pension cost for any one year will not reach a maximum until the youngest employee at the time of the beginning of the plan reaches an extreme old age. In other words, the annual cost, apart from any increase in the number of employees, will show a continued increase for some 60 or more years after the origin of the plan. This is due partly to the longer service records of the younger men who eventually reach the retirement age, and partly to the effect of higher wage scales as the business grows.

2—At the maximum, the pension cost will be about 10 per cent of the annual payroll, assuming that present tendencies in the rate of turnover will continue. Some municipal pension funds which have been in operation a long time require an annual appropriation in excess of 20 per cent of the current salary list. The present experience of American pension plans, whereby a yearly appropriation of about 1 per cent of the annual payroll is adequate to meet current requirements, will most certainly prove an unreliable criterion in the future.

3—An annual appropriation of 1 per cent of the payroll will probably prove sufficient to pay all current pensions and provide an adequate fund for the future, including allowance for growth in number of employees and wage increase, if it is made effective when the business begins. But as most pension plans are started after the concern has been in existence for a certain period, the 1 per cent appropriation takes care of the present and future only. The accrued liabilities of the past must also be taken into

consideration if the reserve fund is to start on a solvent basis. An initial reserve appropriation of about 50 per cent of the current annual payroll will be necessary for this purpose.

4—An annual apropriation of about 2¾ per cent of the payroll is a fair estimate of what is necessary to meet current pension requirements and build up a fund for future needs in the case of companies which have been established for many years.

Establishing a Dependable Pension System

In the first place, a comprehensive analytical survey by an actuary or statistician is necessary to determine the rate of increase in pension liabilities from the beginning of the pension qualification period to the date of inception of the plan. This rate must be projected into the future to determine the approximate rate of prospective increase. The first years that a pension plan is operated show a comparatively low pension cost relative to the amount of payroll. As the pension plan is applied year after year, the increase in numbers of employees qualifying for the position is relatively much greater than the increase in payroll. It is apparent that provision must be made at the inception of the plan for taking care of this increase in the number of pensioners. Various plans have been suggested, but none of them, excepting those which have been prepared in accordance with insurance methods, has been effective.

In order to devise an accurate, mathematically scientific system for a group, it is necessary to consider the factors of labor turnover and life expectancy at the age of retirement, in the light of the insurance mortuary tables. Although it is impossible to figure turnover with a degree of certainty that could be relied upon in respect to mortality percentages, a company during the first year of existence should establish the practice of setting aside a sufficient pension reserve and of permitting it to increase at compound interest, to provide for all eventualities, including turnover.

If a corporation, through lack of understanding of sound pension procedure, finds itself in deep waters, it will at least be possible to apply correct principles in the development of a new or revised plan. Usually a three-phase problem is presented, embracing qualified pensioners, those employees whose qualification periods are in process, and employees who will qualify in the future.

The Paper Maker's Fear of Progress

By FRED. GROVE-PALMER, A. I. C.

London, England

DO WE ever stop to think of the great number of firms in the different branches of the paper making industry that are stopped from progress by the weight of tradition.

Although it may not apply universally to us as it does in some of the countries abroad, yet there are many factories that are hanging on to their age-old methods of manufacture and to the totally out-of-date plant and machinery with an affection, that if it were real and not merely fear of investing more capital productively, would be touching in the extreme; actually it leads only to losses in the output—that is to say, in the output that would be possible from a mill of that size in which all is as it should be. It must be realized that it is quite impossible for any concern, no matter how big it may be, to retain a position at the head of the paper industry, so long as it is contented to keep on using processes and machines that were in vogue fifty years ago but have been supplanted by the advanced producers of the present day. The slow running machinery, the old grinders, beaters, carriers and the rest of it, finely built stuff, are possibly running as smoothly as they did when they were installed in the factory, but it cannot be denied that their output efficiency is very far below that which is demanded by the standards that have been set by the requirements of the present time.

And yet, although this state of affairs is fully understood by all the most intelligent leaders of commercial enterprises, out-of-date machinery and methods are permitted to engulf a large percentage of those profits that should be going to the shareholders and, by keeping up the costs of production, are preventing the expansion of trade that should be following the endeavors of the factory workers. There is a story told of a rube papermaker which usually brings a laugh, though it is probable that there is more than grain of truth lurking in it. This man was visited by a drummer who wanted to sell him an up-to-date fourdrinier to replace the antiquated collection of rolls and gears that he was then using. The paper man turned the matter over in his mind for a bit and finally guessed that his mill was too small for a "four" drinier and that he would make it do with a "three" drinier for a year or so.

Let any firm send its representatives out on the road with a view to the sales-promotion of an improved or a new process in this country and it will be surprised by the amount of resistance they have to face and overcome, to say nothing of the hidebound determination on the part of the manufacturers to stick tightly to the old time processes, by means of which they have made money in the past.

Firms will be found everywhere whose great shout is: "What do we want with changing about? We are quite satisfied with what we are doing; what's the use of altering it?"

They may exhibit, with a certain amount of pride, an elderly engine laboriously turning its heavy old shafting, just as it has been right up from the day, forty years ago, when it was put in, and they will ask: "Can you beat it? It is a record." They are probably right; it would be hard in some cases to find anything older outside a museum or the pages of a "History of the Steam Engine" for the young. Perhaps the most beautiful example of all was a mill where the shafting, which ran underneath the building was made of four inch square bar, and the engineer guessed that it only took twenty-two per cent of his horsepower just for turning that old iron around.

It hardly appears to be of much value to talk to business men of the necessity for re-arranging the routing of the material through the mill, and yet there is an immense amount of loss caused by lack of foresight in this direction. By sitting down on a job and watching every detail it is quickly seen that there are plenty of instances in which no less than twenty per cent of the time occupied by the stuff in passing from the entrance gates to the shipping floor is spent in handling it backwards and forwards, up and down, totally unnecessarily. And when it is pointed out to them, can they be induced to see light and bring in the suggested alterations? The answer to that question can only be found in a profanely expressed negative. In some of the factories that have been visited, it was shown that outputs might have been raised fully one-fifth merely by making a change in the routing and that this would not involve increasing the expenditure by a cent either directly or indirectly; that the bottle-necks which seem almost always to occur in mills might be done away and production made simpler and easier, but every time there was some tradition or other so-called reason why it could not be done, and would not be until some kind friend chose a dark and stormy night to set the place on fire.

It is astonishing enough to find this determined opposition to any fresh ideas in the men who have been on the job for anything up to twenty years and who will not consider a change for anybody, even if he were divinely inspired, but it is far more astounding to discover the same feeling exhibited by the younger generation of workers. In all probability it is the deadweight of the traditioners that holds them back and stops them from doing as they would wish, until finally they become imbued with the desire to leave all alone and to carry on as father did. This handicap operated for a long time in one particular firm where the father had built up a high reputation for the quality of his goods and refused absolutely and point-blank to allow the introduction of any of the modernisations or new-fangled ideas that his two sons, college trained men, were always striving to bring in. When at last it came to a show down, the boys girded up their loins and left the old man to it; they started in opposition and today their factory is the largest in the country, if not in the whole world, for that special line of goods.

Not Equipped to Make Money

Listen to this; it is a verbatim report of a conversation that took place recently:

"I want to bring to your notice a well tried method of production that will let you ship this evening the goods that you started on in the morning; instead of taking three or four days, you will take only one and there will be no deterioration in the quality of goods; you may even find them improved, and your output will be lifted to anything from fifty to seventy-five per cent above what it is at present."

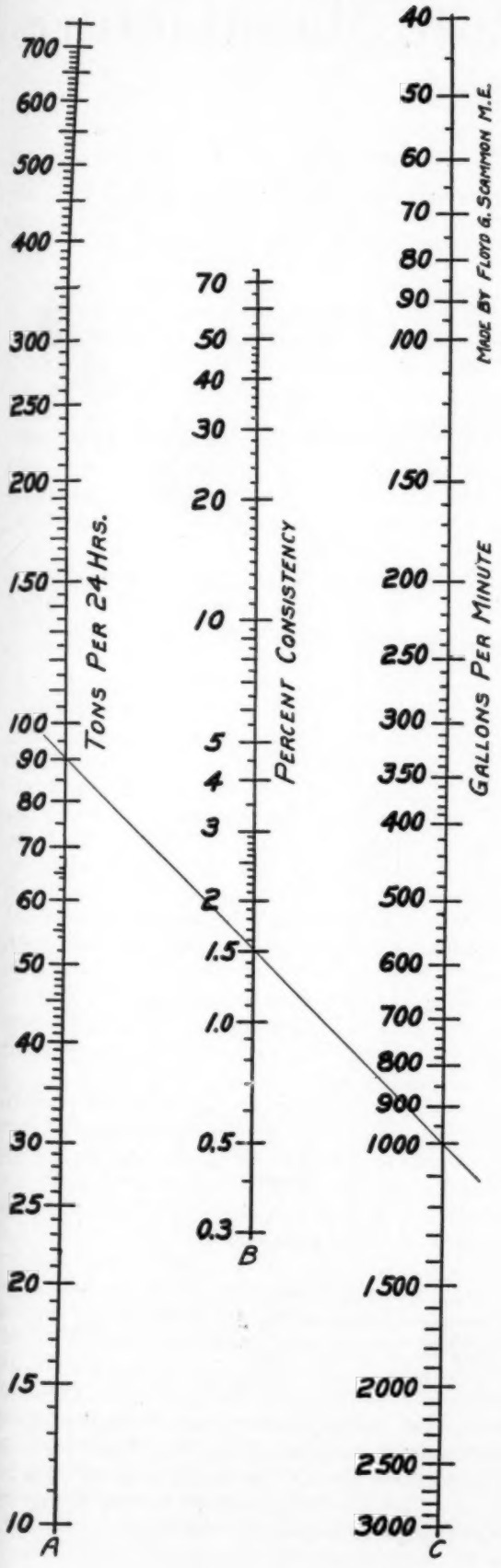
"Yes, but we are not equipped for that!"

Hear it! They were not equipped for making any more money or doing any more trade, and consequently the process was turned down without a trial.

This was far from being the only instance of the kind. In another case where they refused to make a trial, they admitted that business was on the decline; during the past year they had sold a large part of the factory land and had rented out many of the buildings; in the old days they used to employ one hundred and twenty men, now they had all they could do to find work for fifteen. It was hard, d—d hard, after all the years they had put in, too! It wasn't as though they had ever brought in any new schemes, they had stuck closely to those old methods adopted in the beginning, and now, see what was their reward! It reminded one very forcibly of that lovely story of the widow, bemoaning her fate and saying that the dear departed had been a martyr to delirium tremens.

Another very popular wail from these people, whose middle name is Mud, is: "We are far too busy looking for business to be able to spend time on experiments. You get some other folks to try it out and if they succeed we will think about it and profit by their experience."

Can you believe it? It is not the least use trying to make any appeal to them to get in on it now, and gather all the flowers as soon as the blooms appear; not to leave it all for their competitors. Tradition freezes them and fear of progress chills the blood (or is it water?) in their arteries, and they will sit around wringing their hands while their trade is being gathered in by the men who are on the look out for something new and who will go the limit in their endeavor to discover some means of bringing about even small improvements and reductions of costs.



Simplified Calculation of Stock Quantities

By FLOYD G. SCAMMON, M. E.
International Paper Co., Chisholm, Me.

IN MILL practice it is often required to know the number of tons of stock that will be supplied every twenty-four hours by a given number of gallons a minute of slush stock, the consistency of which is known. The accompanying chart will be found very convenient for this purpose.

Example: How many tons of air-dry stock will be supplied in twenty-four hours by a pump throwing 1,000 gallons a minute at 1.5 per cent consistency? The line drawn across the chart shows how to solve the problem quickly with a straight edge. Pass the straight edge through the 1,000 mark on Column (C) and the 1.5 mark on Column (B). The answer is given in Column (A) as 90 tons a day,

Inversely the chart may be used to determine the number of gallons a minute at a known consistency that are needed to supply a given number of tons a day (twenty-four hours). Or if the number of gallons a minute is known or can be measured over a weir or otherwise, and the production in tons a day is known, the consistency of the stock in solution can be determined very closely by passing a line through the Tons a Day in Column (A) and the Gallons a Minute in Column (C) and then reading the consistency in Column (B).

The answer is, of course, given in terms of air-dry or bone-dry stock, according to the basis of the test for consistency.

The chart is based on the following formulas:

$$\frac{T}{Cx6}=G \qquad \frac{T}{Gx6}=C \qquad GxCx6=T$$

in which T=Tons every twenty-four hours; C=Per cent Consistency, expressed as a decimal, and G=Gallons a Minute.

As an example, take the problem stated above and applying the third formula, GxCx6=T, but substituting known quantities, we have 1,000x.015x6=T, or 90 tons a day.

This formula is easy to memorize and equally as easy to use, in fact it can be used mentally for most ordinary problems.

The chart and formulas are accurate enough for all practical purposes, since the factor of 6 which is used in the formulas is in reality 6.0084, if the specific gravity of the slush stock is taken as 1.0, which is a reasonable average.

Today the vital matter to which business must needs address itself is the re-emphasizing of high standards of business ethics, for upon such a foundation only can business be permanently successful.

—John D. Rockefeller, Jr.

The Process of Sulphite Manufacture

Part IV—Cooking[1]

By FRED MOTSCHMAN
Member of T. A. P. P. I. and Sulphite Chemical Engineer

AFTER the wood has been prepared in the wood room and reduced to chips—of dimensions that have been found most favorable in the consideration of production, loss by sawdust or "fines," penetration by the acid, and resulting strength and bleachability—the chips are conveyed by elevating belts or conveyors to the chip storage bin above the digesters.

The chip bins should be of such size as to contain at least two digester chargings when the bins are full. The filling of the digesters is done by gravity, the flow of chips being regulated by means of a large gate over the openings. It might be well to remember that one of the variables which we have in cooking is the amount of wood in each digester. Uniform rate of filling means a fairly uniform charge of wood. The slower the chips are run into the digester, the more chips can be put in, as they will then have a chance to pack and settle down.

Mechanical devices on the market which have for object to increase the amount of chips which can be put into the digesters, are sound from the standpoint of production, but it must be borne in mind that about 45 grams of CaO are needed to react with each 1,000 grams of lignin and so there will be an upper limit as to how much wood (and therefore lignin) can be put into a given unit and still turn out the same quality of pulp. Regarded from this same angle, the suitability of these devices for a given mill will vary with the amount of non-cellulose material in the kind of wood used in the mill.

The digesters themselves are now fairly familiar pieces of chemical engineering equipment. They are built primarily with regard to rules of steel construction and lined with acid-proof materials. The lining may vary from 8 to 10 inches in thickness according to the size of the digester; the main function of the lining is protection of the shell from the corrosive action of the hot acid liquor.

When the digesters are filled from the top with acid, this operation must take place after the chip loading. The bottom filling of digesters has much to recommend it. It speeds up the process by cutting down the delay time from the blow of one charge to the start of the next one. When the digester is partly full of chips, the acid pump can be started and the acid valve opened into the digester, as the chip loading is faster and will always be ahead of the acid. (Fig. 3).

[1]Part I of this series by Mr. Motschman was published in the April, 1928 issue of The Paper Industry; Part II in the May, 1928 number; and Part III in the September, 1928 issue.

Where the Decker system of cooking is used, the injection of the dry and wet relief gases can also begin just after the acid is started. There is an economy of SO_2 gas with bottom filling because of the readiness with which the "free" will leave the acid and come out into the surrounding air when top filling. This gas is released in bottom filling, but is taken up very rapidly by the chips.

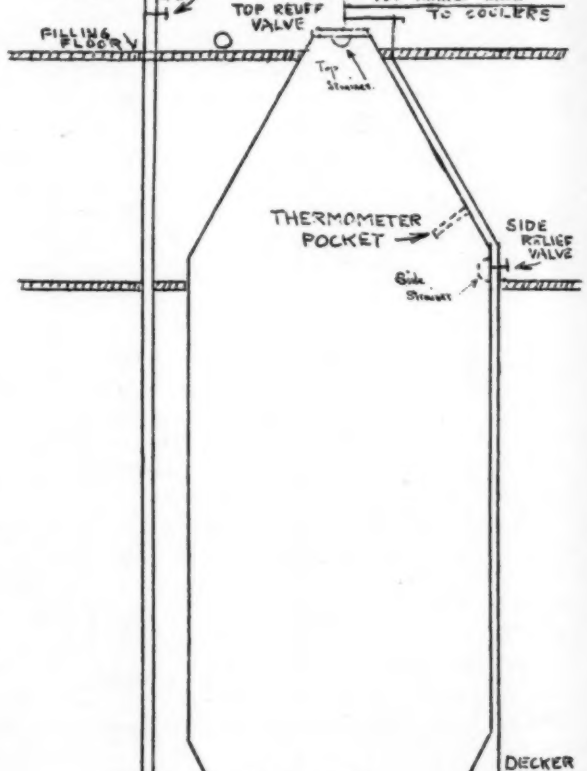


Figure 3

Charging and Circulation

The actual cooking will vary considerably from mill to mill, but essentially the process is the same everywhere, as we are all trying to make as pure cellulose as possible, with as few losses through the cooking as can be conveniently avoided.

If we remember that the ideal cook would be one which was long drawn out and run at low temperature, it will be easily seen why we hold for certain rates of temperature rise. In the Mitscherlich process they cook at as low as 248° Fahr. (120° Cent.) and their cycle from cook to cook will be as high as thirty-six hours. [Mitscherlich's original formula called for a cooking period of sixty hours.—Ed.] The explanation for this type of temperature rise is that at lower temperatures the lignin reacts actively with the chemicals; and at high temperatures it might be possible that the cellulose would break down and we would consequently have no yield of pulp at all.

Accordingly, when we try to plan a temperature curve for the cooking of a certain wood, we should aim for the lowest possible maximum temperature at which the cook can be made in a reasonable length of time and then approach this temperature by a gradual concave upward line.

The source of heat in the digester is the steam which is admitted at the bottom, or in the case of the Decker system, the first heating is done by the hot relief, gaseous and liquid, from the other digesters in the series. In order to make room for the incoming steam, we must relieve from the top of the digester. This top relief is not always dry gas, but usually carries with it, by entrainment, some liquid from the digester; in fact, it is usually full of steam.

If the digester becomes full of liquid and more relieving has to be done in order to bring up the temperature, we have a fitting on the side provided with a strainer inside of the digester (called the side strainer as compared to the "top strainer" attached to the digester cover and through which the top relief gases pass), called the side relief valve through which we can reduce the liquid level in the digester and thus give a gas space above the pulp and make it easier to relieve the top gases and get better circulation of the charge.

In speaking of circulation in a digester, it is understood that there is no movement of the entire charge to any appreciable extent, but rather that we get a thermo-syphon effect by convection currents up through the liquid as a consequence of heating the vessel at the bottom, followed by a downward movement along the sides as the upper and outer portions of the mass are cooled by radiation from the digester shell.

One of the common difficulties of cooking is poor circulation. The causes of poor circulation are numerous. It sometimes happens that the steam inlet nozzles are "made up" with sulphates from poor acid, or with insoluble monosulphites resulting from local overheating or too high a percentage of combined in the cooking acid. Poor circulation may often result from local packing or bridging of the chips. The digester may start with good circulation and then become settled during the rest period, or owing to a too gentle use of the steam and relief valves.

Stated briefly, the direct result of poor circulation is poor pulp. When such a condition exists, it means that the various observations made by the operator have been subject to more than the usual amount of error due to variables. Thus, suppose that he gets a sample of the liquor from the live section of the contents, he will have a test which will show up as though the cooking was proceeding more rapidly than usual because he is not cooking the whole mass, but instead is overcooking that portion which is active.

Again, if his sampling area lies in the "dead" sector, his observations, liquor test, pulp sample (if the digester has a pulp sampling plug cock), and temperature readings, will show an abnormally slow cook and even though he may "shake up" the mass by heavy steaming and relief, it may come too late and the cook prove unfit for use, or even at best show up as an off-batch.

The Operator's Responsibility

The immensity of the digester cook's job cannot be overstated. It is a job which requires a lot of judgment, for even though he has taken a liquor test, blown a sample of pulp out of the side, noted his position or progress on the temperature, pressure and other cooking chart curves, he must take all these factors into consideration, and it is then a matter of personal judgment and experience as to how near he is to the end-point of the cook.

Let us consider the proportions of this project. Suppose the digesters under consideration are 16 feet in diameter by 52 feet high. They will then blow under favorable conditions about fifteen tons of pulp. [In old-style cooking it was estimated that 1 cubic foot of wood in the digester would yield 4 lb. of pulp, but with modern apparatus the yield is calculated as 7 lb. from one cubic foot.] Into the digesters are put about twenty-eight cords of wood, 32,000 to 34,000 gallons of acid being then pumped in. In order to bring this digester up to temperature and pressure, and cook it for eleven or twelve hours, we will have used about 60,000 pounds of steam. When nearing the end-point of the cook, the operator draws out of his side-relief test cook a tumblerful of the liquor, and from the test of the residual SO_2 in this sample and from its color and smell he attempts to picture the conditions existing inside of the digester.

If he had 34,000 gallons of liquor, there would be

544,000 tumblerfuls, and his prediction is based on the assumption that the other 543,999 tumblerfuls in there are similar to the one he has in hand.

Also regarding temperature, the operator's reading on the thermometer is based on the temperature at that point and from cook to cook the readings may be similar, but how about faulty readings caused by poor circulation and the temperature changes that are possible eight feet toward the other side or fifty feet below him?

Following the usual cooking chart, we find merely a graphic record of what has been going on inside of the digester as shown by the several points of observation. In direct cooking it is pretty generally the practice to bring the batch up to temperature and pressure in about two-and-a-half hours. By bringing up to temperature, we mean 212° Fahr., the boiling point of water. By the term pressure, we mean the predetermined maximum pressure at which it is the practice to run all of the cooks. This will generally be from 70 to 80 pounds. During this time, any pressure which shows on the pressure gauge will be gas pressure, as the temperature is still below the boiling point.

When the Decker system is used, the time to pressure will be somewhat longer and will vary with the length of the injection period. In this system, the temperature rise is being done by means of the relief from the others in the series and the pressure is purposely held down to allow for subsequent steaming, the temperature of boiling not being reached until after the injection is over.

It is known as a law of gases that in a vessel containing more than one gas, if they have no chemical effect on each other, the total pressure in the vessel will be equal to the sum of the partial pressure, or in other words, the pressure of the individual gases. This is why two curves are drawn to show the pressure in the digester. On the gauge, the pressure in the digester is read directly and is plotted at the proper point as the total pressure at the same time the operator reads the temperature of the digester contents. This reading is plotted as part of the temperature curve, but he also refers to his steam table and ascertains what pressure of steam corresponds to this temperature. Thus, if he has a temperature of 287 degrees, it is found to be equal to a steam pressure of forty pounds, and if the gauge shows there is now seventy-five pounds total pressure, the difference, or thirty-five pounds, must be due to SO_2 gas by the law of partial pressures.

Another reading made during the cook which is a very important one as regards the progress of the cook is the titration of total SO_2 left in the digester liquors.

During the first part of the cook the degeneration of the cooking acid is very rapid from the time of the steaming of the cook. This arises from two causes, first the heating of the acid causes it to lose strength and second the dilution of the liquid by condensed steam. Of course, the wood soaks up the SO_2 and so a digester would test a gradual lowering acid test even though no steam were added.

In the Decker process, this is not strictly the case. Instead, we actually have a very appreciable fortifying of the acid during the injection period even though the temperature is rising. It is this initial period of penetration in the Decker process which is very important.

Any test which follows the degeneration of the acid during a cook would be equally important, but the very best test of any would be one which followed the residual amounts of combined SO_2 left at the various stages, because here we would have the surest way of noting the condition of the acid, and provided we have good circulation and our sample is therefore representative, the pulp will not become burned or blackened if there is still present some combined SO_2. The difficulty comes in finding a rapid, accurate method for testing for the combined SO_2 in the presence of the products of cooking, especially in the later stages of the cook.

Suiting the Cook to the Pulp Desired

It is very important that the operator should know the use to which the pulp he is making is to be put. His handling of the digester will vary according to whether he is making stock for unbleached, easy bleaching, a high strength pulp which is allowed to be hard bleaching, etc.

The modern custom when cooking unbleached pulp for newsprint is to include in the pulp blown from the digesters just as much non-cellulose material as possible, thereby providing an increased yield per digester.

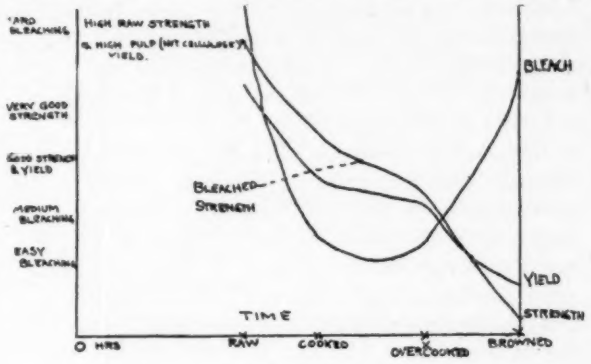
In making "news" sulphite, operators can afford to undercook their stock considerably since it is not to be subject to bleaching and very little beating. When stock is cooked for easy bleaching, it is generally conceded that the stock may sacrifice a few points in strength in order to cook out most of the materials other than cellulose.

If we notice that as a pulp approaches the highest degree of purity in the digester and naturally with this purification the bleach requirement will decrease, and then we swing to the limit in this same direction we soon begin to defeat our own purpose. Thus, if the cooking is continued at the high temperature—first, the yield begins to suffer as the cellulose becomes reactive during this range; second, the strength will also suffer as the fibers become more and more overcooked; third, the bleach requirement will begin to swing upward, as is proved by the greater amount of bleach necessary to bring a darkened (overcooked) pulp up to color.

Thus it will be seen that we have a repeating curve in the case of the bleach; the strength and the

yield will drop together, while if the raw and bleached pulp strengths are both considered, it would be expected that to bleach the hard bleaching stock would normally mean a large shrinkage and a low bleached strength on this pulp.

In the following curve I have only roughly designated areas, not points, in quoting the qualities of the stock. The times are also indefinitely designated as I know of no data to fill in on such a series of curves. It is to be hoped that such a problem will be taken up on an experimental scale and much valuable information thereby be gained. These curves are purely diagrammatic and represent only an attempt at translating to a graphic form some of the indications which are apparent in handling of pulps.



Lessons in Paper Making

Lesson XXIV—Vacuum, Atmospheric Pressure

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the twenty-fourth of a series of lessons in practical paper making, appearing in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course, conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

AS MY readers are aware, this monthly series of paper making articles is prepared primarily for personal delivery to our own paper makers under the Vocational Education Scheme. While the text remains the same, we find the personal delivery much easier than the writing. Perhaps this is because we have in common with all paper makers the delight in "talking paper." Old timers will remember the saloon days when more paper was made in the barroom than in the mill and the bartender would suggest a little fresh air while he cleared the "broke" away. Perhaps the personal delivery is easier because of the happy environment of a room full of paper makers discussing the practical problems and during that discussion shooting questions at the teacher with a facility which suggests machine gun precision.

These questions are varied in character, but always extremely pertinent to the operation of a paper machine or the preparation of stock. The other day we received this poser, "What is **Vacuum**?" For a moment we felt like answering like the school boy did who was asked the same question. He said, "well, ma'm, you know the bung hole of a barrel? Well, vacuum is a bung hole of a barrel with the barrel taken away." However, we begged for time and decided to prepare a lesson, not with the hope of defining vacuum, but with the hope of making clear the application and use of atmospheric pressure in the forming of a continuous web of paper. So we prepared the lesson, and it was received with such enthusiasm we are venturing to offer it to our readers just as it was presented. Of course, the personal element will not be there and the subject matter may be very elementary to a lot of us. However, to those of us whose school days are long behind and who, like the writer, feel the constant necessity to brush up on the "high brow" stuff, keep on reading and as you read, please transpose yourself in imagination to a warm class room of discursive paper makers wreathed in tobacco smoke.

Possibly we should begin with the time-honored statement, "Once upon a time," of fairy story style with a subject like vacuum to deal with, because fairies and vacuum are in the invisible and intangible class. In the beneficent existence of the first, we still have secret faith; before this class dismisses, we will **prove** the existence of the second.

How the Weight of Air Was Found

If vacuum is invisible and also intangible, how then was it discovered? Perhaps a few moments spent in browsing over the history of the determination of the weight of one atmosphere, a determination which permits us to harness for industrial uses the air we breathe, to create controllable pressures and temperatures by the exhaustion of air, such time will not be spent amiss.

You know in the medieval times about the 16th century, the feudist aristocracy of Europe gathered to their courts the most talented men and women of their day. Sculptors, artists, musicians, scientists, all flocked to the courts of wealth and power to display their art. Some of the feudist princes earned

for themselves a reflected glory by providing an honored place in their courts for these brilliant and learned men so that they might pursue their art without the worry of immediate financial earning capacity. Thus, the princes gained for themselves the title of "Patrons of Art."

Incidentally, in these modern days of democratic thought and industrial progression, individual men of wealth and big industrial corporations devote huge sums of money to the furtherance of culture and learning. That of itself is also a thought to give consideration. There is still a remunerative field for brains, perhaps a greater field than there is for Bolshevism.

However, to resume. Among these feudist princes was the Duke of Tuscany, a Florentine noble whose name will live for all time because he was the patron of that famous scientist, Galileo. Near the close of Galileo's life, the Duke of Tuscany had a deep well dug near the city of Florence, and was surprised to find that he could get no pump in which water would rise more than 32 feet above the level in the well. He appealed to Galileo for an explanation, but Galileo appears to have been equally surprised, for up to that time everybody supposed that water rose in tubes exhausted by suction because "nature abhors a vacuum." Galileo suggested experiments to find out to what limit nature abhors a vacuum, but he was too old and enfeebled in health to perform them himself and died before the problem was solved by others.

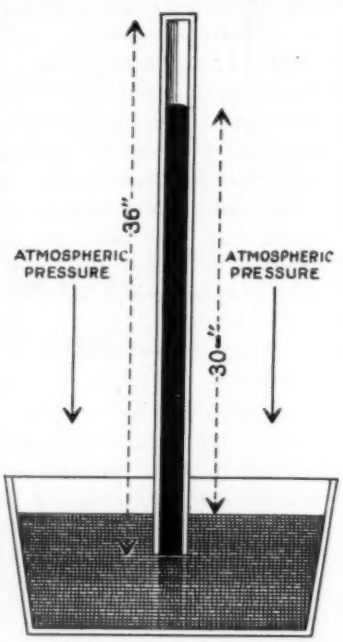
Torricelli, a friend and pupil of Galileo, hit upon the idea of measuring the resistance nature offers to a vacuum by using a column of mercury in a glass tube instead of a column of water in the Duke of Tuscany's pump. The experiment was performed in 1643 by Viviana under Torricelli's direction.

We can better follow Torricelli's reasoning by following him in his experiment. Torricelli procured a glass tube about a yard long sealed at one end, and also an open dish containing mercury. He filled the 36 inch glass tube with mercury and placing his finger over the open end, he inverted the tube and placed it with the open end immediately below the surface of the mercury in the open dish. The column of mercury in the glass tube began to empty into the dish until it had fallen from a column of 36 inches to a column of 30 inches. At this height of 30 inches, the column of mercury remained steady.

What, then reasoned Torricelli, is supporting this column of mercury 30 inches in height? Nothing but the **weight** or **pressure** of the atmosphere on the surface of the mercury in the open dish.

To Pascal is due the credit of completing the demonstration that the weight of the column of mercury in the Torricellian experiment measures the pressure of the atmosphere. He reasoned that if the mercury is held up simply by the pressure of air, the column should be shorter at higher altitudes because the higher we go, the more rarified the atmosphere, **the lighter the density, the lesser the weights of the air.**

We must admire the persistence and reasoning powers of these long dead scientists. They were not satisfied with merely evolving a theory and then proclaiming it from the housetops, they checked and rechecked. **They were chiefly concerned with finding the right answer** and not with capturing the credit. So Pascal set out to check his reasoned theory by taking his apparatus to the top of the Tour St. Jacques, 150 feet high, at that time the bell tower of a church in Paris. Sure enough, the column of mercury in the tube fell shortly below the 30 inches of height. Still not completely satisfied, Pascal wrote his brother-in-law (these in-laws come in useful at times), to try the experiment on the Puy de Dome, a mountain nearly 1000 meters high in Southern France. Again the soundness of the theory was fully proven. At a height of 1000 meters, the 30 inch or 76 centimeter column of mercury became 8 centimeters **shorter.**



TORRICELLIAN TUBE AND DISH

Then Pascal commenced to re-check. He reasoned that if it were the pressure of atmosphere supporting the column of mercury, then if he used a lighter liquid than mercury, the **same density** of atmosphere **must** support a **higher** column of **lighter** liquid. So he used glass tubes 46 feet long and filled them with red wine instead of mercury. We can't show this particular experiment; we might be able to get the glass tubes, but we are not listed by the bootleggers. However, this experiment fully proved the soundness of the theory and the Duke of Tuscany was fully answered; **liquids rise in tubes exhausted of air because of the pressure of the atmosphere on the surface of the liquid outside.**

The Unit of Air Weight Measure

Then came the question of arriving at a unit of measure so that we may have a definite unit of this atmospheric pressure or weight. As we have seen, the pressure of the atmosphere varies with the altitude and also with the temperature of the air. So

a standard set of factors had to be established. A column of mercury 30 inches or 76 centimeters high with an internal cross sectional area of one square centimeter at the temperature of melting ice (0 degrees centigrade), and at sea level in latitude 45 degrees, has a density of 13,596 grams per cubic centimeter. The result we see in the following equation: 76x13.596 equals 1033.3 grams per square centimeter, or roughly, one kilogram per square centimeter, equivalent to 14.7 pounds per square inch. **This weight per square inch is termed the pressure of one atmosphere.** The height of a column of water to produce a pressure of **one atmosphere** is 76x13.596 equals 1033.3 centimeters, and this is equal to 33.9 feet. Thus we see we cannot **lift** water with a lift pump to a greater theoretical height than 33.9 feet. In actual practice, due to pipe friction, leaks, etc., we find 28 to 29 feet is about the best we can do. Of course, we can install extra **lift** pumps at successive heights to **lift** the water to the desired height, but this is expensive so the practical method is to use a **force** pump to **throw** the water.

Application to Paper Making

Now let us see how this information helps us in practical paper making. The atmosphere is all around us and exerts **equal pressure** on every square inch of surface. Thus, on every square inch of the palm of my hand I have the weight of atmosphere which we have seen is, disregarding for the moment the question of altitude and temperature, 14.7 pounds per square inch. How, then, do I hold it? Why does not this weight make itself felt? Because there is an equal atmospheric pressure on every square inch of the back of my hand. **There is thus under normal conditions a balancing of pressures.** A few months ago we read of the death of Captain Hawthorne while trying to make an altitude record by balloon ascent. Investigation showed that when his oxygen supply gave out he died in the rarified atmosphere to which he had ascended. **The pressures were not balanced.** Again in the tragedy of the S-4, we read of divers working below the surface of the ocean 200 feet down. They had to be provided with special suits inflated with air, **an effort to balance the pressures so that they would not be squeezed to death by the tremendous pressure of water at that depth.** Even with the most scientific precautions, these divers were regulated to twenty minutes work below the surface and then **gradually** drawn to the surface so that the **pressures could be again gradually balanced.**

If we exhaust the air from the inside of a suction box, we get an atmospheric pressure on the surface of that box equal to the amount of air exhausted from the inside.

To examine that statement, let us imagine the wire is stopped with no paper on it. We start up the suction pump. The pump is running at full speed, exhausting air from the box to its rated capacity, **yet there is no register of vacuum on the vacuum gauge.** This is because there is no **resistance** to the efforts of the pump to **obtain** air. The air goes from the box to the pump and the vacated space is instantly occupied by air flowing through the wire to the box. **There is an absolutely uninterrupted continuous flow of air, therefore, there is no register of pressure. The balance of pressures is constantly maintained.**

Now suppose we start the wire up and put a sheet of paper on the machine. As the thin film of paper forms and passes over the suction box, we see the vacuum gauge begin to register inches of vacuum. **This register represents the resistance offered to the pump to obtain a continuous flow of air through the paper to the suction box. It represents the pressures of equivalent inches of mercury.**

Thus, if it were possible for us to create a sheet of paper sufficiently dense to offer a total resistance to the passage of air to the suction box, and the pump could create an **absolute vacuum** inside the suction box, we would have a register of 30 inches of vacuum on the vacuum gauge and a **pressure of one atmosphere applied to every square inch of the paper subject to the suction pull.** In other words, we would have a pressure supplied by air of 14.7 pounds per square inch over the applied suction area.

Now we know we cannot raise 30 inches, so let us reduce this to figures we are always working with. What is the average vacuum you raise on your suction roll, Bill? 20 inches, all right. If 30 inches represents 14.7 pounds per square inch, then 14.7 pounds divided by 30 will give us the pressure per square inch per each inch of vacuum. The suction area is roughly, not figuring the metal spaces between the holes, 160 inches x 5 inches. This gives us 800 square inches of applied suction area. From our little division sum we find that one inch of vacuum is equal to a pressure of .49 pounds per square inch. Thus we have a **total** pressure on this suction box of 392 pounds for each inch of vacuum registered. For 20 inches, then, we have a total of 392x20 or 7840 pounds.

Now that's one whale of a pressure **and we cannot see it.** When we have to lift a 50 pound weight and put it on the press lever, we **know** that is heavy; we can **see** it and **feel** it. Yet we have nearly **four tons** pressing on that darned couch roll most of the time and all we can see is fresh air, and by gosh, they do say that only the pigs can see that when the wind blows.

Next week boys we will talk about the suction boxes, how by increasing the number of boxes we can reduce the pressure per square inch. We have had enough "high brow" stuff for one day, and so far I've done most of the talking. It's question time, so shoot 'em along and don't hesitate. If we can an-

swer, we will do so. If we don't know the answer, we will not hesitate to say so.

And so my patient reader, that is a sample of the classes conducted by the Champion Fibre Company, Canton, N. C., under the supervision of Mr. J. Norman Spawn. If you like it, there is more to follow. If you also have questions to ask, shoot 'em along.

The Growing Importance of Offset Lithography

By JOHN STARK
American Tissue Mills, Holyoke, Mass.

THE modern offset press is the culmination of twenty-five years of study, experimentation and combined effort on the part of the offset press builders, manufacturing lithographers and lithographic offset press operators. It is the printing press par excellence of the twentieth century.

When we see these magnificent pieces of machinery turning out upwards of 3,000 sheets per hour, lithographing the very highest quality of fine color work in perfect register, two colors at one operation and entirely automatic, we sometimes feel that the millennium has arrived insofar as the acme of high class lithographic printing is concerned.

There are upwards of 500 lithographic houses in this country alone, with an average of four lithographic offset presses each, upwards of 2,000 presses capable of a daily output from each press of 20,000 sheets or, taken collectively, a possible daily output of 40,000,000 sheets. Notwithstanding this the real truth of the matter is that the lithographic offset process is in its infancy.

Less than a decade ago offset lithography was practically unknown—even today the layman does not know what it is all about. A good many papermakers look upon the manufacture of offset paper as a side line which has to be tolerated because of the continual demand for a paper of this quality. Day by day the demand for offset paper is becoming more and more insistent, and the papermaker who does not make a study of the problems of making paper of all kinds for the lithographic offset press will be left in the lurch.

As a matter of fact, almost every sheet of paper manufactured today for printing purposes may be required to be used on an offset press, because former users of letterpress and other direct methods of printing are every day discarding their present machinery as obsolete and installing up-to-the-minute automatic offset machinery. Under this condition the paper you sell today for the older direct method of printing may be required tomorrow for use on the offset press.

We hear of some firms who are ordering a great number of these presses at one time. On a recent visit to New York I was informed that one firm in New Jersey had recently ordered six large two-color offset presses besides some single-color machines, and the reports from leading manufacturers of these lithographic offset presses is that they cannot keep up with the ever-increasing demand for deliveries from all over the country with their present equipment.

Do not these facts indicate the growing importance of offset lithography to the paper industry at large? Does it not mean that the papermakers will have to acquaint themselves more fully with the requirements of offset lithographers in general? Does it not mean that papermakers will have to make a more accurate and scientific study of this comparatively new process with a view of obtaining at least a fair share of the large valume of business which is sure to be developed from the continued installation of these high-speed automatic machines?

Heretofore, offset paper has been considered or looked upon as a special kind of paper having a certain bulkiness, a matte finish, no fuzz, a minimum of stretch and the quality of lying flat either side up. Consequently papermakers have striven to make a paper as near to these specifications as possible, with more or less success—more from the papermakers point of view and less from the lithographer's point of view.

As a consequence, the buyers of offset printing have become more or less accustomed to accepting this one class of what we will term special offset paper when buying offset lithography. But with the ever-increasing demand for offset lithography in advertising and for office stationery, label work, and in fact all kinds of printing, including catalogues and book work, a new situation has arisen and the lithographic offset salesman now finds that the customer expects to have something to say about the kind of paper on which his job is going to be lithographed. It is assumed quite naturally that the papermaker will have to take into consideration the possibility of any paper manufactured by him having to be lithographed on the high-speed rubber offset press with its automatic feed and automatic delivery attachments.

Up to the present time I do not believe that this aspect of the situation has been given sufficient consideration, if any at all. Nevertheless it is my firm conviction that papermakers who take the lead in this direction will be the ones who will benefit from an increasing demand for all kinds of paper capable of printing properly on the automatic lithographic rubber offset press.

Those papermakers who have made a study of the problem of making paper for use on the offset press will realize to a large extent some of the difficulties that will be encountered if they are to figure in the future on this new possibility.

Many kinds of paper that are being manufactured today and are being printed quite satisfactorily by

the direct method of lithographic and letterpress printing will be found quite unsuitable for use on the lithographic offset press, mainly because the impression is transferred to the paper through the medium of a rubber blanket which is often slightly damp and "tacky".

Therefore we find that an entirely different situation has arisen. In the past it has been the ambition of the papermakers to create a surface that would adapt itself to the requirements of a direct impression, thus making it easier for the printer using the older methods to obtain the desired results, while on the other hand such an artificial surface is not only unnecessary, but, in many cases, positively harmful when used in connection with the rubber blanket as a means of obtaining the best results in producing high class lithographic offset printing. As a result we find the papermakers today are confronted with a twofold problem: (1) To make paper of all kinds which will fulfill the requirements of the lithographic offset press and (2) to make a paper that will at the same time be suitable to the demands of the purchasers of printed matter who for a generation past have been trained to use certain kinds of paper made to meet special requirements, now no longer existing, since the advent of the lithographic rubber offset press.

The Paper Mill Machine Shop

By HERMAN A. YARGER

Master Mechanic, River Raisin Paper Co., Monrie, Mich.

WE ARE often asked the questions: What are the advantages of a machine shop in relation to the paper mill? Are machine shops profitable to the paper manufacturer?

In an endeavor to answer the above questions, it might be well to incorporate a word relative to the incentive prompting the purchase and installation of machine shop equipment.

We are living in a period where every effort is being made to attain and maintain peak production. Therefore, to approach the ideal, continuity of performance must be maintained which demands a high degree of reliability in the repair department with spare parts and supplies at hand to care for any emergency.

The full value of the machine shop is not realized in keeping it as a stand-by for equipment, waiting for a break-down, but rather in anticipation of such, making parts which will eventually need replacing, thereby making the plant as near independent of outside source of supply for replacement parts as possible.

The paper mill that is at the mercy of the general repair shop is surely under a serious handicap, for in a majority of cases such shops have equipment not entirely suitable for paper mill work and furthermore such work must take its place in line with that of other customers thereby causing delays which curtail production.

It was my good fortune at one time not so many years ago to hear a very prominent paper manufacturer say that there was a time when he questioned the advisability of equipping a machine shop in connection with his plant, but after a period of operation of the shop, he said "he was thoroughly convinced that the investment was a very good production insurance."

His machines are started at the beginning of the week and rarely suspend operations until the week end and this condition still prevails in his mills.

Every mill has its own mechanical problems to consider and in selecting machine tools to meet these conditions a careful survey of the machinery in the plant should be made by a practical maintenance engineer so that no job will be too large or none too small for the machine shop equipment. It is therefore difficult to specify machine tool equipment that would be suitable for all mills. However, the shop of which I have charge consists of the following:

5 Lathes	1 Open Side Trimmer
1 Shaper	5 Drill Presses
3 Power Metal Saws	6 Tool Grinders
1 Roll Grinder	1 Knife Grinder
1 Arbor Press	1 Wheel Press
2 Slitter Grinders	1 Pipe Threading Machine
2 Portable Bench Planers	2 Wood Planers
2 Wood Jointers	1 Swing Cut-Off Saw
4 Band Saws	1 Wood Boring Machine
2 Wood Lathes	1 Saw Gummer

1 Universal Milling Machine
2 Universal Cutter Grinders
2 Complete Smithing Outfits
2 Combination Wood Sawing Machines
1 Band Saw Filing Machine

In connection with this, we have a very complete supply store and tool crib from which all material and tools are either requisitioned or checked out. The small tool equipment consisting of air hammers, stone drills, electric and air drills, electric grinders, chain hoists, rope blocks, jacks, chain and other material too numerous to mention, enable us to handle almost any work in connection with maintenance or manufacture of replacement parts.

The importance of the supply store can hardly be estimated especially during repair periods when material is needed quickly and outside sources of supply not available during week ends.

I am sure any paper mill large or small possessing a properly equipped and managed machine shop and supply store would find it a very profitable institution, handling their own work economically and possibly securing outside work in quantities sufficient to pay a nice dividend on the investment.

Current Thought by William Sibley

What of 1929?

SINCE coming events are predicted in large measure on past performances, introspection necessarily is prefaced by retrospection. Only by considering yesterday can we properly view tomorrow. It is essential that we appreciate the extent of past progress if we are to realize what are the basic factors underlying future development.

Knowing that 62 men today can produce as much as 109 men in 1900—and do it in spite of the fact that the hours of labor have declined, in this same period, a full 18 per cent; at the same time realizing that during this 28 year period industrial employment has increased 94 per cent as against a population increase of only 55 per cent—enables us to understand the far-reaching importance of recent developments in labor saving and aiding machinery and devices.

The saving of labor and the increasing of employment have added to individual and collective earning powers, while the shortening of labor hours has lengthened rest, relaxation and pleasure periods, thereby enlarging our spending capacity. Such figures prove that the advent of every new invention designed to substitute the hand of the machine for the hand of man, imposes increased demand for human labor. The more labor-saving machinery there is, the more men are required to operate the vastly increased total of the whole fabric. New industries spring up in support of the revolutionary, labor-saving ones. All of which gives us increased production which brings more things to more men, increased free time, better wages and cheaper goods.

Virtually, no industry has been passed over in our great advance of recent years. The gain in production throughout the United States since 1900 weighted to cover all fields, has been 142 per cent. Specifically, the production gain in manufacturing enterprises has been 175 per cent; mining, 348 per cent; car loadings (railway transportation) 199 per cent; chemicals, 364 per cent; population, 55 per cent; agriculture, 47 per cent. This last figure, which shows the tardy advance of agriculture (as compared with other industries) may be explained by the fact that the agricultural industry, more than any other, has a larger percentage of members who cling to obsolete methods and machinery. This conclusion is proved by the astounding figures available from large scale farming enterprises. Where the most modern machinery is in use, the labor costs for plowing an acre is 27 cents; seeding an acre, 7 cents; discing, 10 cents, and harvesting (including threshing) for 40 cents. This gives large scale, modern crop raising a total labor cost of only 84 cents an acre. Thus has farming been benefited by improved machinery, and thus would the agricultural industry be benefited if all members would take advantage thereof.

Like the farmer, the manufacturer who today finds himself with "profitless prosperity", doubtless can find the reason in his adherence to obsolete methods and in the employment of inefficient machinery.

Nor is the end of our mechanical progress in sight. The adaptation of motive power to all industry continues to increase. While in 1900 the horse power per wage earner utilized was 2.18, today the utilization of mechanical energy is 4.32 horse power per wage earner. Conservative authorities have expressed the belief that this utilization would lift itself to 5.00 by 1930. And in considering prosperity trends, there are few better barometers than the utilization of motive power to industry.

Today, the United States Patent Office issues a patent on some invention every 20 seconds—and the flood of applications is constantly rising. By far the majority of patents granted are to cover inventions having to do with labor-saving devices. What better long-range indication could there be that our per-man-production will still further be increased, while our labor-hours still further be shortened?

The Immediate Future

The foregoing covers only long-range development, past and future. What of the early tomorrow?

In considering the prospects for 1929 we must first look at the problems confronting our new Chief Executive. First among these is the matter of farm legislation. Should there be greater tariff protection for farm products? Should there be bounties to co-operative marketing organizations? Should direct financial assistance be given by the Government in marketing surpluses?

Mr. Hoover is a specialist in the elimination of "waste" in "standardizing" products and in "stabilizing" markets. From long experience he also knows how mixed is the blessing of governmental bounties or subsidies. It is not inconceivable that permanent and substantial farm relief will be accomplished through co-operative organizations sponsored or supervised by a Federal Farm Board. I believe in some such manner Mr. Hoover can be depended on to bring about a material advance in agriculture.

Tariff: Should it be revised or left unchanged? It seems to be the consensus of opinion that there will be no material change in the present schedule.

War debts: Should they be cancelled or reduced? Should the Government sanction attempts to induce American investors to absorb one or more billion dollars worth of German reparation bonds? Doubtless Mr. Hoover fully recognizes that the war debts owing to the United States (considering present armaments and military preparation) are the best possible assurance of a continuance of peace. It is hardly to be thought that he will encourage government sanction of extremely shaky investments.

Transportation: Should the Commission's attitude toward consolidation be clarified? Does the Transportation Act of 1920 need revision? Should the I. C. C.'s mandate be altered? Should Federal money go into the development of inland waterways? Mr. Hoover always has encouraged unification when, as and if such procedure in no way encroaches upon the rights and interests of the public. Doubtless the railroads will be given a freer hand in the matter of consolidation, thereby facilitating the consummation of many such plans still awaiting I. C. C. approval. It would not be straining credulity to believe that Mr. Hoover would reason thus: "If Federal money is needed and justified in the building of highways, why not also in the development of inland waterways?"

Public Utilities: What shall be the Government's attitude toward waterpower? Should government ownership be extended or curtailed? Should public utilities be regulated by a commission similarly to the railroads? It is well recognized that Mr. Hoover's stand has been very clearly for private operation of all utilities. He is so firmly opposed to governmental competition with private corporations that all proposals for Federal control or operation of hydro-electric power units probably will fail to gain executive approval. Inasmuch as our Government even now is impeded with the barnacles of too many "bureaus", "departments" and "commissions", it is to be doubted that a "Power Commission" will be established.

Chains: Should the Government heed the demands for legislation dealing with chain stores and chain banks? If by "enchainment" distribution costs can be reduced (to the benefit of the public) the new administration may be expected to look with favor on enabling legislation.

Prohibition: Should still more money be appropriated in an effort to "enforce" the 18th Amendment and the Volstead Act? Should the Federal government or the local police forces, assume a larger or a lesser part in "enforcement"? "Enforcement" doubtless will be continued status quo under the belief that the public gradually will come to the consciousness that prohibition, bad as it is, is better than saloons; just as vice and gambling, bad as they may be, are better than openly licensed vice dens and gambling resorts. Eventually we will realize that periodic raids on "speakeasies" is a more beneficial condition than open saloons.

Experts: Shall the Government interest itself actively and financially in the maintenance of the "balance of trade"? What is the government's wisest course with regard to our marine? Mr. Hoover's thorough understanding of foreign markets will be effective in expanding our trade with foreign countries; not alone those of Europe and the Near East, but the Orient and Latin America as well. Mr. Hoover's present trip through South America is little more than an initiation of a policy for expansion of foreign trade. Steps will doubtless be taken to transfer the administrative functions of the Shipping Board to the Merchant Fleet Corporation, and even more encouragement given to private capital than the Jones-White Act affords.

Backward industries: What steps can the Government take to assist the advance of lagging industries? Administrative effort during the coming year or two probably greatly will benefit the more difficult fields such as oil, coal, sugar, and textiles. These benefits will come through price stability, production economies and extension of markets. The advantages to the American public arising from such effort must be obvious.

Summary

In summary and corroboration of the conclusion that 1929 will be a period of increased prosperity, the opinions of a few of the country's leading economists are given as follows:

Alexander Hamilton: General business during the year of 1929 should continue as at present, in excellent volume.

Babson: Business will continue to maintain its level of somewhat better than "normal."

Gibson: Generally satisfactory conditions should continue, leaving the outlook for 1929 favorable.

Harvard: The end of the prosperity phase of the long business cycle is not yet in sight.

Franklin: A good volume, at present levels, is to be expected during the first quarter of 1929.

United Business Service: Business will continue in excellent volume into the coming year.

Eankers Economic: With a very favorable outlook for such industries as steel, automobiles, and railroads, the general outlook is good.

Brookmire: The current high level of business gives every indication of continuing, well into the new year.

New York Power and Engineering Show

Wealth of Exhibits in Machinery and Boiler Room Equipment Indicate Progress in Steam Power Field

THE Seventh National Exposition of Power and Mechanical Engineering, which was held at the Grand Central Palace, New York, during the week of December 3 to 7, 1928, fully maintained the reputation of preceding exhibitions for extent and variety of displays, there being 551 separate booths, of which 231 represented new exhibitors. As a means of disseminating knowledge of mechanical advancement and calling attention to new inventions in mechanical science the National Power Show occupies an important place in the movement for industrial development.

Miraculous Accomplishments

In opening the exposition, Senator Henry F. Ashurst of Arizona termed mechanical science the "fifth estate" and said it was the most dramatic and mysterious form of endeavor, and would ultimately be most unusual. Commenting on the rapid advance of invention he reminded his audience that Grover Cleveland had never seen a motion picture and Theodore Roosevelt had never heard a radio. In view of the miraculous accomplishments of science in recent years he said no man should ridicule any scientific notion, because it might early become the new marvel.

No Striking New Development

Although there have been no very striking new developments in the field of mechanical engineering during the past year, as pointed out by a committee of the American Society of Mechanical Engineers which met during the week of exposition, there has nevertheless been a great deal of intensive work in the consolidation of gains incident to past progress and a raising of the average standard of steam-station design and operation throughout the country.

Progress in Steam-Power Engineering

The major objectives attained in steam power engineering during the past twelve months were outlined by the committee referred to in succinct and interesting fashion as follows:

1—The types of fuel preparation and burning equipment which are available permit the efficient burning of coal varying in grade from lignite to anthracite.

2—Fuel preparation and burning equipment is available which is sufficiently flexible so that coal of widely varying grades may be burned in connection with a single installation.

3—Fuel burning equipment, boilers and boiler accessories are available which permit the generation in a single boiler unit of the steam required for a 75,000 kw. turbine.

4—Single-cylinder turbines of 75,000 kw. capacity, tandem-compound turbines of 160,000 kw. capacity and cross-compound turbines of from 200,000 kw. to 300,000 kw. capacity are available.

5—Equipment is available for operation at steam pressures up to 1,400 lb. per square inch gauge and steam temperatures up to 750° Fahr. (There is considerable evidence to indicate satisfactory operation at even higher temperatures.)

6—Equipment is available for the reheating of steam withdrawn from the lower stages of the turbine, using either the heat from flue gases or the latent heat from high pressure steam.

7—There is available equipment for heating feedwater by means of the regenerative cycle, using from three to five stages of heating.

8—Furnace water-wall construction is available which eliminates to a great extent the use of refractories in the portions of the furnace wall which are subjected to the highest temperatures.

9—Condensing equipment is available which will maintain high vacuum with low investment and operating costs.

10—Economizers and air heaters are available by means of which the losses in the flue gases are reduced to very low values; and the investment and maintenance incident to the use of this equipment are reasonable.

11—There is available commercial equipment for operation on the mercury-vapor-steam cycle, each unit in the boiler house being capable of developing up to 20,000 kilowatt capacity.

12—There is available combustion control equipment which will maintain day in and day out in the boiler house, operating efficiencies closely approximating test efficiencies.

13—For the average power station it has been possible to reduce the make-up water to approximately 1 per cent which may be easily evaporated with an inappreciable loss consequent on the degrading of heat. For boiler plants requiring a high percentage of make-up, equipment is available which makes it possible to maintain conditions of operation and a degree of reliability and availability of boiler unit closely approximating that for boilers operating on distilled water.

14—The coal- and ash-handling equipment now available make very low labor costs obtainable.

Wide Range of Equipment

It is obviously impossible on account of space limitations to give a detailed account of the many exhibits of interest to factory and plant managers. It is sufficient to state that any mill or factory executive about to equip a new plant could find most of the parts in this show, as the range of exhibits included pulverized coal burners and oil burning equipment in addition to the newer types of water-cooled furnaces to withstand the high temperatures developed by the use of the newer forms of fuel, which it is well known are sufficient to disintegrate the ordinary kind of fire brick. Hence there were interesting exhibits of the fire bricks and high-temperature cements manufactured by the Carborundum Company, of Niagara Falls, N. Y., the General Refractories Company, of Philadelphia, and the Quigley Furnace Specialties Company, New York.

Large Display of Pumps

Pumps of various kinds figured largely in the displays, there being twenty-one pump concerns listed among the exhibitors, but the most striking display of all was that made by the Nash Engineering Company, of South Norwalk, Conn. In harmony with a line of advertising across the front of an overhead tank which read, "The Modern Equipment Meeting Modern Requirements," the spacious booth of this company facing the main stairway was decorated along modernistic art lines in pleasing colors. The two massive square side supports were painted in aluminum white and lettered in an appropriate shade of green. Nothing was overlooked. The floor was picked out in blue and black squares with yellow borders. Pumps, compressors, and ejectors, of which several were exhibited, lost their ordinary work-a-day mechanical look, under the brush of the impressionistic painter and shone resplendent in glossy coats of enamel paints in tints of orchid, gold and green. Some of the pumps were operated electrically and furnished practical demonstrations of the working parts of such apparatus as the Jennings vacuum heating pump, the Jennings centrifugal pump, Nash vacuum Hytor pump and compressor, etc. A suction sump pump figured prominently in the display.

Other Displays

There were many boiler concerns, some ten being noted and one aisle was occupied with six ball-bearing displays. Perhaps the most novel and popular display was made at the booth of the General Electric Company where it was demonstrated that street lights could be controlled by the

sun's rays. A photo-electric cell was so sensitized and arranged to turn off the light switch when the sun's rays fell upon it with sufficient intensity and to turn on the electricity the instant the room was darkened. The device could be used, it was asserted, in a similar way to govern power plants, without the aid of a human hand.

Maine's First Regional Safety Meeting

Paper Mill Men Lead Conference at State House in Augusta

THE first of the regional safety conferences to be held since the annual Safety Congress in New York last October was staged at the State Capitol, Augusta, Me., on Thursday, November 15, 1928. In addition to the paper and pulp section of the National Safety Council, the co-operating organizations included the Department of Labor and Industry of the State of Maine, Maine Associated Industries, Maine Automobile Association, and American Society of Safety Engineers. Paper manufacturing firms in Maine, Massachusetts, and New Hampshire sent representatives, the following concerns and men connected with the paper industry being registered as in attendance:

Advance Bag & Paper Co. Inc., Howland—Lawrence Cousins, Ben Runnells, Fred C. York; **Androscoggin Pulp Company**—So. Windham—P. L. Shaw, Geo. C. Wilkins.

Brown Company, Berlin, N. H.—J. M. McGivney, J. J. Tellington.

Continental Paper & Bag Corporation—Rumford—Edw. L. McManus; New York—George J. Adams.

Eastern Manufacturing Company, South Brewer—D. J. Mooney, Charles E. Walker.

Fraser Paper Ltd., Madawaska—James Reith.

Hollingsworth & Vose Company, Boston, Mass.—Nat. F. Bartlett.

International Paper Company, Chisholm—A. F. Record; Riley—Matthew Pakulski, Frank Pakulski; Livermore Falls—W. F. Buntin, M. R. Conners, Lee Ware; New York—John Lundrigan, C. H. O'Connell.

Madawaska Company of Van Buren, Van Buren—Antoine J. Lacroix.

Orono Pulp & Paper Company, Bangor—N. E. Leeman; **Oxford Paper Company and Maine Coated Paper Company Division**—Rumford—Arthur J. Landry; **Oxford Paper Company**—Rumford—W. E. Howard.

St. Croix Paper Company, Woodland—W. J. Brennan, F. L. Irvin, L. J. Parant.

S. D. Warren Company, Cumberland Mills—Edw. L. Lincoln; Gardiner—Charles E. Baker, Clifford T. Perkins.

L. J. Parant Presides

L. J. Parant, general manager of St. Croix Paper Company, Woodland, Me., the mill that won the grand trophy awarded by THE PAPER INDUSTRY, along with the trophy of the National Safety Council for holding first place among non-accident mills, was chairman of Maine's First Regional Safety Meeting and fulfilled the duties of his office to the evident satisfaction of all present. Business was dispatched according to schedule with clocklike precision and there was never a dull moment in the proceedings, which lasted from 9:30 o'clock in the morning till 5 o'clock at night. During the closing hour of the meeting, Mr. Parant called on Nat. F. Bartlett, employment manager of Hollingsworth & Vose Company, Boston, to take charge of the meeting and conduct a round-table discussion which turned out to be one of the most lively and informing features of the day's work.

Safety for Humanity's Sake—Chairman Parant in calling the meeting to order sounded the same note he did in accepting the major trophy of the National Safety Council at the big Congress in New York when he gave the reason for the interest displayed by the St. Croix Paper Company in the national safety movement. It was not for the money saved through accident elimination nor for the increased efficiency gained but for the sake of humanity; to prevent suffering, to stop the crippling of men and to make the working man's world a better and happier place to live in.

In acknowledging the pleasure and privilege of acting as chairman of Maine's first safety conference, Mr. Parant expressed his gratification at meeting so many men connected with the industries of the State who were interested in the

Delegates to Maine's First Annual Safety Meeting at State House, Augusta, Me., November 15, 1928

safety movement. While it was embarrassing in a measure to occupy a position of such prominence, he said he did not feel the same degree of embarrassment as did a certain public man during the recent political campaign who addressed a gathering of voters in a colored church and was introduced by the colored minister somewhat as follows:

"Breddern and sisters—I want to present to you a good friend of de colored people. Der haint no better friend of the colored folks dan our speaker tonight—why, he don't know no color; he don't know no creed; he don't know no religion—he don't know nuffin."

State Extends Greetings

Owing to the unexpected absence of the Hon. R. O. Brewster, Governor of the State of Maine, who had been called away, the Hon. Burleigh Martin, Speaker of the House of Representatives, was drafted to make the address of welcome. After a few words of introduction from Chairman Parant he joined him on the rostrum of the Senate Chamber where the meeting took place. He faced an audience numbering 150 men and representing seven or eight of the basic industries of the State, including some forty individuals connected with the pulp and paper industry.

Speaker Martin congratulated the conference on the large attendance and said it augured well for the future of the safety movement in Maine. Mentioning that he had just had a very interesting talk with Walter J. Brennan who had posted him on the progress of the safety movement, he added jokingly that anything in his remarks which might not be to the liking of the audience could be credited to Mr. Brennan and the rest to himself. He then paid a tribute to Charles O. Beals, Commissioner of Labor, who, with Alvin F. Record, of the International Paper Company, had been chiefly instrumental in organizing the meeting. Having had the privilege of representing Augusta in the State Legislature for three terms, Speaker Martin had naturally come in close contact with Commissioner Beals whose work as head of the Labor Department he commended as highly creditable to the State of Maine.

Purpose of the Meeting

Before introducing Julien H. Harvey, manager of the New York Office of the National Safety Council, Chairman Parant made a brief statement concerning the objects of the meeting. The purpose of the meeting, he said, was to demonstrate that accidents on the streets and highways, in other public places, in the home and throughout industry did not "just happen," but were caused by circumstances and conditions within human control. The part played by the National Safety Council in controlling preventable accidents was touched upon with appreciation. In reference to the membership, he said that the National Safety Council was financed by 4,650 member companies and no matter how large a company might be it was not entitled to more than one membership in the Council. He instanced the International Paper Company with its many mills and thousands of employees counted as one membership, and then there were the Pullman Company, United States Steel Company, Standard Oil Company, Vacuum Oil ompany, each of which was credited with only one member, but making a representation of upwards of 10,000,000 persons enrolled either directly or indirectly in the National Safety Council. The individual membership of 4,650 represented 153 different industries in addition to government departments, community safety councils, chambers of commerce, insurance companies, etc.

A Romance of Industrial Organization—Chairman Parant gave an historical resumé of the National Safety Council. The first safety congress was held in Milwaukee in 1912 and a formal organization meeting took place in New York City in 1913 when the body was originally started as the National Council for Industrial Safety, a name which was changed when the scope of the institute was enlarged to include safety on the streets and highways, in other public places, at home, on the sea, and in the air. He traced the growth and development of the Council, which now takes the lead in practical accident prevention work in 150 different lines of industry. The growth of the Council was, he said, a real romance of industrial organization. Last year the Council spent more than $664,000 in its perpetual safety campaign, a like amount being expended by its affiliated units.

Part Played by Pulp and Paper Mills—The interest displayed by the pulp and paper industry in the safety movement was touched upon. In 1927, 119 mills were entered in the safety contest, representing 33,786 persons. In 1928, the number of mills was increased to 124, with an individual representation of 36,357. Whereas in 1927 there were 1,468 lost-time accidents reported, amounting to 28,396 days, in 1928 the lost-time accidents showed a reduction to 1,355 and 26,368 days lost. The average frequency rate in 1927 was 33,514 while in 1928 this was lowered to 28,422, representing a reduction of 15.2 per cent.

The benefits of organized safety work were further shown in a reduction of the average severity rate from .649 in 1927 to .553 in 1928, 17.9 per cent less. During the 1928 contest eight mills completed the period without a lost-time accident, as compared with six mills in 1927.

Mr. Parant cited examples from other industries to show how accidents could be kept down or prevented altogether.

Growth of Regional Conferences

The regular program was then taken up. In the absence of George E. Burns, of Chicago, who was on the program for a paper, Julien H. Harvey, manager of the New York office of the National Safety Council, addressed the delegates. He said that the interest in State or regional conferences was growing so rapidly as to tax the capacity of the Chicago office to keep up with the demands made upon it. "Such growing interest in accident prevention is most encouraging," he said.

Mr. Harvey outlined the history of the safety movement, giving credit to the steel companies and railroads as pioneers in their plants, but, as he said, it was not enough to limit safety education to the four walls of a plant; a safety campaign must start with the children. He spoke of the first community effort undertaken in Rochester, N. Y. (under his own direction), ten years ago. The constitution of the Council having been changed to take in all phases of accident prevention and the inculcation of safety. Some seventy cities had followed the example of Rochester and undertaken similar work, especially in the education of children. He said that the great value of a conference like the present one consisted in the opportunity of spreading the safety doctrine.

Factors of Safety—In analyzing and picturing the safety movement, he used the figure of a triangle with an E at each point and an S in the center, the E's standing for Efficiency, Education, and Enforcement, while the S represented Safety. He insisted that the principles of engineering, education and enforcement applied with equal force in an industrial plant, at home, or on the streets of a town.

The National Safety Council laid chief emphasis on the value of education. He digressed from the subject momentarily to say that prohibition could never be enforced until the public was educated, not even if an enforcement officer were to be stationed in every street of a city.

Introducing Mr. Lundrigan

Chairman Parant thanked Mr. Harvey for an interesting and informing address, after which he introduced John Lundrigan, industrial superintendent of the International Paper Company, who was on the program for a paper on "Fundamentals of Accident Prevention." Mr. Parant referred to Mr. Lundrigan as a man who had had many years of experience in dealing with workers in various parts of the United States and Canada and who was for a time Commissioner of Labor for the State of New York.

The size of the gathering was an agreeable surprise to Mr. Lundrigan and others in attendance who commented on the lack of newspaper publicity for the meeting. Mr. Lundrigan alluded to this in introducing the subject of his set paper, from which he deviated from time to time to make a point that occurred to him.

Losses Through Accident and Illness—He prefaced his address with a summary of accidents and mortality statistics as reported in the daily newspapers within a few days

following the receipt of the invitation to address the gathering. He also quoted from a report to the Secretary of Commerce showing an annual cost and economic loss in this country from preventable diseases and death of over $3,000,000,000, $1,800,000,000 of which represented loss among the gainfully employed. The report stated that 25,000,000 persons in the working class had defective vision requiring correction, 1,100,000 with some form of tuberculosis and more than 6,000,000 with organic diseases resulting from infection. The United States Public Health Service was authority for the statement that each year over 42,000,000 gainfully employed lose 350,000,000 working days on account of non-occupational accidents and illness. Mr. Lundrigan said:

Remove the Cause—"The fundamentals of accident prevention are the same as those applying to the correction of any wrong condition; that is, remove the cause.

"Some good people," he continued, "are under the impression everything possible is being done at present. They even believe the situation is well in hand and rapidly improving: others look on the whole thing as a matter of luck, that we have epidemics of accidents similar to measles, etc.; still others feel that if it is anybody's business, it belongs to the insurance companies, and many of our statesmen and near statesmen, particularly the latter, are quite sure we can always meet the situation by enacting another law, particularly a money penalty statute.

Accidents an Operating Cost—"Our company knows from records of its own that industrial accidents are a direct operating cost that can be reduced. A large number of industries are showing remarkable accomplishments. Still, there is an increase in the volume and cost of accidents as a whole."

Mr. Lundrigan believes that leadership to stimulate public opinion is a necessity. "We must inspire the school, pulpit, and press and our forty-nine governments with the fact that these conditions have news, educational and humanity values that should be kept constantly before all our people," he said. This leadership should insist on the actual teaching and practice of health and safety as a part of our primary and advanced school education.

Advocates Safety Instruction in Schools—"We recognize and applaud what is now being done here and there in schools, but it is not enough. I know of no good reason why accident and health literature, even statistics, cannot be used in large part as a substitute for so called standard text books; neither is there any reason why local medical people are not regularly used as an integral part of every school staff."

In closing, Mr. Lundrigan expressed his conviction that statute law should pay more attention to requiring safe conduct and practice on the part of supervisors and managers, foremen and working people.

Chairman Parant thanked Mr. Lundrigan for his contribution and invited discussion of Mr. Harvey's address as well as Mr. Lundrigan's.

Enforcement Methods

Charles E. Walker, of the Eastern Manufacturing Company, asked if particulars could be given of methods of enforcing safety practice, under the third E of Mr. Harvey's triangle diagram.

Mr. Harvey explained that there were so many angles to the subject as to make it difficult to give specific rules. The relations between officers and men differ widely in various plants and in some cases men infringing rules might be entitled to a warning before inflicting a penalty. He suggested that if anyone in the audience had experience in such matters he should speak of it for the benefit of the others present.

Chairman Parant spoke of the organization of a safety department in the St. Croix Paper Company's Mill and the placing of a responsible man in charge who was also at the head of the employment department with authority to take on and discharge men. He called upon Frank L. Irvin, manager of the employment department at the St. Croix Mill, to speak.

Mr. Irvin described the routine method of examining applicants for employment and told of the system in use to maintain interest in safety projects through the distribution of literature, including a monthly plant journal as well as the exhibition of motion picture films every third Sunday giving lessons in safety.

Punishment for Violations—Walter F. Brennan, of the same company, discussed the measures taken to punish violators of safety rules. For the first offence the man is suspended from work for a certain period and on a second offence he is discharged. The records of the department showed that violators of safety regulations were suspended, demoted, and discharged in that order and the morale of the plant was benefited by enforcement measures of that kind. He made the point that guarding of machinery was not the most important thing in safety work, and to put over safety it was necessary to develop a proper mental attitude in the men. The putting up of guards and pulleys without paying attention to the psychology of the situation would not do. Minor injuries, such as cuts, scratches and bruises are required to be reported to the proper authority for attention. This was insisted upon as a measure to prevent possible infection and serious illness.

Operation of the Prohibition Law—E. M. Hamlin, of the American Thread Company, observed with reference to the operation of the prohibition law as cited by Mr. Harvey, that when industrial management exacts of itself the same personal habits it exacts of its employees a great stride would be made toward arousing public consciousness in the direction of observing the law. In reference to some statements made by Mr. Lundrigan regarding automobile accidents, he pointed out that an analysis of the percentages would show that the fatalities were not so high as reported.

Traffic Congestion—In one of his side remarks Mr. Lundrigan had observed that traffic conditions at 42d street and Fifth and Madison avenues showed a greater congestion than anywhere else in the country, but Mr. Hamlin took exception to this, saying that at the boom period in Miami, Florida, traffic conditions were twice as bad as at 42d street and Fifth avenue. He pointed to results obtained in the city of Los Angeles and commended the universal system of signaling employed there.

Mr. Harvey mentioned that a universal code of traffic regulation had been proposed for adoption by various States but without success.

A New Tourniquet Exhibited

Before adjourning, Henry W. Plummer, of Augusta, Me., was given the privileges of the floor to describe a new adjustable tourniquet of his invention. This was a strap-like affair with a spring plunger or compression device that could be applied immediately over the artery, without impeding the collateral or venous circulation, giving perfect control by simple pressure without bandaging, and the tourniquet could be left in position for hours without danger of causing gangrene through pressure on the tissues.

The sitting was then adjourned for luncheon at the Augusta House.

A Well Attended Luncheon

The number in attendance showed an increase from the early morning registration and 155 persons sat down to luncheon, the cost of which was included in the registration fee of $2. An excellent repast was served, at the close of which the diners listened to an address of great oratorical skill by the Rev. Henry E. Dunnack, State Librarian, who kept the attention of the gathering from start to finish.

Essentials of Oratory—Mr. Dunnack said he had discovered years ago that the one thing essential to be a good public speaker was an absolute lack of knowledge about the subject to be discussed. He was therefore well equipped to make a good speech on safety as he knew absolutely nothing about the topics the delegates had been discussing all forenoon. Recently he had read a long and convincing article in a business magazine and discovered after he had finished reading it that the article had been written by a preacher. There were, however, only a few things at the foundation of economics or anything else.

Principles of Life—The first thing in life is business, then

education, politics or civics, and religion or ethics. Everybody was trying to get these four things to work together. Fundamentally you want character in business, idealism in education, principles in politics, and sacrifice in religion. Politics won't last without principles, or religion without sacrifice. If business does not take care of its own waste it will be eliminated and in the last analysis the business man has to be honest. Religion must live in forms and ceremonies. Indifference is a vice.

Indifference a Destructive Force—The fellow who throws all the monkey wrenches into the machinery is the indifferent fellow. The other fellow who leaves it till tomorrow typifies the destructive influence of neglect. The fellow who throws the monkey wrench is the one who fails to take advantage of the opportunities presented to him, while the fellow who puts off doing things is just bad and represents a destructive force. We are all finding out that ethics, morals, and brotherhood are the main things in life.

In this way Mr. Dunnack closed a first-rate homily which was thoroughly appreciated by all present.

SECOND SITTING, THURSDAY AFTERNOON

The afternoon sitting was opened by Chairman Parant at 2:15 o'clock, L. E. MacBrayne, general manager of the Massachusetts Safety Council, being introduced to discuss the subject of "Safety, a Community Problem."

Economic Loss Through Accidents

Mr. MacBrayne said he assumed that the topic assigned to him was intended to cover the whole subject of economic loss through accidents and not to discuss industrial hazards alone. An estimate of the loss through accidents in Massachusetts made a short time ago placed the figure as high as $35,000,000 annually, covering accidents in industry, on the highway and in the home and elsewhere. He analyzed the fatal accidents which occurred in Massachusetts last year, showing the number chargeable to motor vehicle accidents, industrial accidents, the home and other public places than the highways.

Trend of Accidents—By means of a circle graph he showed that nearly five-eighths of the fatal accidents in Massachusetts were charged against the home and public places other than the highway. While 693 persons had been killed by motor vehicles, industrial deaths numbered 313, a figure which meant little unless it was known whether the trend of accidents was up or down. Since 1918, industrial accidents had decreased 60 per cent, with a reduction of 27 per cent in accident loss cost. In the same way, the 693 deaths on the highway last year were significant in connection with the fact that deaths from the same cause numbered 755 two years before, and 1928 might show a reduction for the third consecutive year. This would indicate that the efforts of State authorities, insurance engineers, and the Safety Council had been successful in getting at the root of these accidents.

Dangerous Days and Months—He asked if this should be the function of State-wide agencies or could a community work out its own problem. He described conditions in Boston with which he was familiar and said that the point for saturation for pedestrian traffic is reached when 800 people per foot of width are trying to pass each hour; and 1,000 were actually endeavoring to do this. Saturday was named as the most dangerous day in every week and the period from 4 to 6 P. M. as the most hazardous. October and November were the death months of the year, the first two months being the time of low accident experience. He mentioned these facts, he said, in order to show how important it was to concentrate efforts upon the time and place of definite hazards, rather than spread them so thin that nothing was accomplished.

Susceptibility of Individuals to Accidents—Mr. MacBrayne developed as his second proposition that accidents were not distributed among individuals according to the law of chance and he quoted from a report of the Industrial Fatigue Research Board which went to show that the bulk of accidents in any industrial group was sustained by comparatively few individuals. This went to show, according to Mr. MacBrayne, that there was a proneness to accidents in a defined group of every thousand persons employed. Proneness to accident does not mean that the individual is certain to be seriously hurt soon after he takes a new job or drives his first automobile. On the contrary, a series of minor mishaps are likely to precede a major accident. Research had demonstrated that all but a few persons in the group of those credited with a high accident rate could be brought back to the normal level with proper instruction in the nature of the hazard, or reassignment to another industrial task.

A Community Problem—Much of Mr. MacBrayne's talk dealt with accidents on the highway so as to drive home the point that accident prevention was a community problem, something which is recognized already by certain of our public service corporations, notably the telephone and lighting companies. He closed with a word of friendly comment to the effect that the elimination of accidents was not a simple proposition. The effect of a well-organized campaign, whether directed against public or industrial accidents was limited in the duration of its influence. The contest against tuberculosis and other diseases had been slow, though it had yielded its results in the end. "We have just entered the radio age of listening in. The public is receptive to knowledge that concerns the individual. But to be knowledge, it must be based upon facts carefully studied and compiled," concluded the speaker. After expressing the thanks of the gathering for the interesting address by Mr. MacBrayne, Chairman Parant said he thought all would agree that for the organization of this, the first safety conference of the State of Maine, all were indebted to the active co-operation of Commissioner C. O. Beals of the State Department of Labor and Industry, and turning to that gentleman he invited him to address the conference.

Management's Responsibility

State Labor Commissioner Charles O. Beals read a prepared paper on "Management's Responsibility," but not before getting his audience into good humor by telling a witty story. He discussed the responsibility placed upon the employer of labor by statute in the State of Maine with a view of showing how working conditions might fit into a safety program under the State law. A considerable part of his address dealt with the operation of the State Department of Labor and Industry and its jurisdiction.

Obscure Costs of Accidents—In regard to accident prevention work, Commissioner Beals said it was desirable to sell to the operating head of the industry the necessity of such work, though it was understood that the wideawake executive must be aware that the cost of the industrial accidents in his plant does not end when the doctor's bill and the compensation to the injured employee are paid. A further more obscure cost, in addition to time lost by other employees, was involved in the temporary breaking down of the efficiency of the whole room in which the accident occurred. The breaking in of a new employee and in many instances repairs to the machinery involved in the accident affected production, and safety should therefore be a part of the productive program. Continuing, Commissioner Beals said:

Educating Employees—"In making safety a part of the productive program, the interests of both groups are affected, as the employer has a responsibility to his stockholders as well as to his employees. Accidents and their causes should be analyzed in that particular plant and comparisons made of general experience in other lines of industry. Safeguarding of mechanical and process hazards must be carried out.

"The greatest task that confronts the safety official of the plant is that of educating individual employees in the safety movement, in other words, to bring them to that stage of interest in the program so that they will become safety-minded, for it is a well-known fact that a safe man can work in safety upon a dangerous machine but that a careless employee is not safe while working around a machine no matter how well it may be guarded.

"Men and women do not as a rule voluntarily choose

dangerous occupations in which to earn a livelihood, but work entailing more or less hazardous conditions must be done, and as wages are what the employee must have in order to live, the risk is taken that the wages may be received.

"Does the employment of a man or woman under these conditions place an added responsibility upon the employer? It is evident by your attendance here today that you believe that it does, and the next question that arises is how this responsibility can best be met.

Teaching Safety—"There are many ways in which 'safety first' can be instilled in the minds of employees, but in my opinion the answer is through educating the individual employee, and to do this it is necessary to have an organization in the plant that will look upon a new employee as the degree team of a secret organization looks upon a new member, and by degrees introduce him to the mysteries of his new employment and the hazards of the plant, and not allow him to feel that he is really a part of the organization until he is fully conversant with the ritual of safety of the plant and is known to be living up to its teachings."

Co-operation Promised—The keynote of Commissioner Beal's address was co-operation. In closing, he said it was his ambition that the Department of Labor and Industry should take a more active part in safety work throughout the State by having its representatives attend plant meetings and assist in every way possible.

Safety and Sanity

Judge B. F. Cleaves, executive secretary of the Maine Associated Industries, Portland, was the next speaker.

Judge Cleaves started out with the assumption that safety means sanity, both physical and mental, that the employee owes to his employer and to himself the duty to become and remain sane in both respects, but that however eager and willing the employee might be to reach this desirable end he could not arrive unaided. Hence the need of intelligent management. Management and workers form a 2-horse team, and if either refuses to go in the same direction, disaster results.

Correct Practices—Industrial sanity, in Judge Cleaves's opinion, represented correct practices on the part of the management fully understood and agreed to by employees. However, if the employee lacks the education, enlightenment or cultural advantages that prevent him from grasping and correctly understanding the proper proposals of management, he is neither safe nor sane any more than the joint operation undertaken by a management and workers is safe or sane.

Advocates More Practical Schooling—Discussing the educational equipment of the workers, Judge Cleaves criticized the educational system which has for years fashioned its high school courses for the benefit of the very small percentage of boys who go to college, and said boys leave at the end of the first year because they have no desire or ability to acquire a classical education.

"I have", Judge Cleaves said, "asked school boys to tell me what 'overhead' is, and not one could give the answer; while, as soon as they go out into life, they at once come under the shadow of Old Man Overhead.

"This situation being wrong," Judge Cleaves continued, "management is trying to remedy it. We have discussed this matter with our educational department, with high school principals, with educators all over the State, and with many others who form public opinion. I am pleased to report a very considerable change in opinion and much progress towards the practice of including practical matters in our high schools.

"We have, in co-operation with our four colleges, established in our centers fairly large classes in business economics, simple psychology, commercial geography and English. We have asked employers to select one or more outstanding men to take these courses with the idea and hope that each such employee receiving during this winter instruction and information, will back in the plant among his associates correct wrong impressions and scatter proper information, while at the same time encouraging among those employees a desire to acquire the same kind of information. It is our hope that during the next ten years a sufficient number of present employees will be so instructed that they will become the leaven to leaven the whole lump."

Credit to Mr. Record

Before calling upon Nat. F. Bartlett to take charge of the meeting for a round-table discussion, Chairman Parant said he desired to associate Alvin F. Record's name with that of Commissioner Beal's as one of the men most instrumental in organizing the present safety meeting.

Advocate a State Committee

The discussion had not proceeded far before a suggestion was made that definite action should be taken by the meeting to enable the Department of Labor and Industry to keep in touch with safety men throughout the State. Mr. Ballantine supported this view, saying it was too good a group to be allowed to disband without taking definite action. He accordingly moved that Commissioner Beals carry on with his sponsoring committee and such others as he might appoint to bring the matter officially to the attention of the governor of the State.

Chairman Parant questioned the wisdom of linking up the State Department and the Governor of the State with the safety movement as there was a risk of politics entering. Mr. Harvey, of the National Safety Council, said that the formation of a State organization might accomplish some good but it should not be formed until after the most careful consideration.

Motion Adopted

After some further discussion, a motion was adopted appointing Labor Commissioner Charles O. Beals, of Augusta, and Alvin F. Record, of Chisholm, a committee to take up with the Governor the advisability of his appointing a safety committee to inquire into safety problems in the State of Maine. Messrs. Beals and Record were empowered by the resolution to add to the personnel of the committee which will decide what steps shall be taken to form a permanent safety organization under the auspices of the State.

Physical Examination of Workers

During the round-table discussion conducted by Mr. Bartlett, the question of physical examination of workers was brought up. John S. B. Davie, Commissioner of Labor for the State of New Hampshire, was present and put some pointed questions to Chairman Bartlett who had previously declared himself in favor of rigid physical examinations of workers at regular intervals. Mr. Davie asked on what Mr. Bartlett based his belief in physical examination as the last word in safety work, and the discussion was on.

I. MacNulty, of the American Woolen Company, discussed the frequency of accidents among male and female workers in woolen mills and wanted someone to tell him why women are less susceptible to falling accidents than men.

F. L. Irvin instanced the case of a fifth hand on a fast-running machine who had experienced three accidents in the course of a year. On investigation it was found that the man was not a quick thinker and consequently ill adapted for the kind of work he was engaged in. He was transferred to another part of the mill.

Commissioner Beals mentioned the case of a man who was subject to fits and was on the point of being discharged when the Commissioner intervened and asked if there was no place in the mill where a man could have a fit. This resulted in a more suitable kind of occupation being found for the man instead of throwing him out of employment altogether.

A good deal of the discussion centered around this question of discharging or shifting men for disabilities. The majority opinion favored physical examinations at intervals and changing men from different jobs to fit their troubles, as was expressed by Mr. McGivney, of the Brown Company.

Thanks to Chairman Bartlett's vim and energy in getting the delegates to rise to their feet and take part in the discussion the closing session was highly profitable and entertaining. Before adjourning, a rising vote of thanks was passed to Chairman L. J. Parant for his services as chairman of the conference.

All Ohio Safety Congress

The Medical Department and Safety in Accident Prevention

THE importance of the present day safety movement could be easily appreciated by anyone fortunate enough to attend the second annual session of the All Ohio Safety Congress. This meeting was held on November 13, 14 and 15, 1928 at the Neil House, Columbus, Ohio, under the auspices of the Industrial Commission of Ohio and the management of the Division of Safety and Hygiene. All meetings were well attended, and interest and enthusiasm were apparent throughout the entire congress.

The first and third days were given over to general sessions, while the second day was given to sectional meettings. One of the sectional meetings of November 14 was that of the pulp and paper section.

At 9:15 A. M. on the morning of November 14, Kenneth L. Faist, safety director, The Champion Coated Paper Co., Hamilton, Ohio, and chairman of the Pulp and Paper Section of the National Safety Council, called the section to order and immediately requested a registration of those present in the sectional meeting. With a few introductory remarks, he called upon Harry E. Hiers of the Ohio Boxboard Co., Rittman, Ohio, to introduce the speakers. Mr. Hiers then introduced Dr. Louis E. Frechtling, Champion Coated Paper Co., Hamilton, Ohio, as the first speaker on the program.

The Medical Department and Safety

Dr. Frechtling spoke on the subject of "The Medical Department and Safety". In his opening remarks he stated that modern medicine was as much concerned in the prevention of diseased conditions as it was in the treatment of those conditions after they occur. With such concern, accident prevention fits into the program of medicine, because accident prevention has for its objective the prevention of accidents with their attendant pain, disfigurement, death and social and economic loss.

Continuing his remarks, Dr. Frechtling called attention to the importance of properly locating the first aid departments of an industrial plant, and of caring for the supplies. He stated that such a department should be located in a place readily accessible, amply lighted and properly ventilated. Supplies should be kept in closed containers, iodine kept in at least a glass stoppered bottle and stopper kept in bottle when not in use; a new applicator should be made for each treatment and the solution for sterilizing instruments should be changed at least once daily.

Industrial accidents were classified by Dr. Frechtling under three headings:

(1) Those due to physical or mental conditions found in the working force

(2) Those due to certain physical conditions found in the place where the workers are employed

(3) Those due to disasters such as fire, lightning, flood, explosion, windstorm or earthquake

With accidents resulting from the third class occurring comparatively infrequently and with only two per cent of the accidents which do occur preventable by guarding, attention should be given to the first classification in which accidents are due to physical or mental conditions found in the working force. Dr. Frechtling stated that industrial medicine can do much to reduce accidents resulting from these causes and that the physical examination is the keystone of the solution. Quoting Dr. C. D. Selby, he said, "The physical examination is the means whereby physicians acquire the information they deem essential to the procurement and maintenance of healthy, physically competent working forces". "Mentally competent" might be added to "physically competent," for it is of as much importance according to statements of Dr. Frechtling.

Physical Examinations—Following these remarks, the speaker discussed the making of physical examinations in the plant of the Champion Coated Paper Company and the results obtained from such examinations.

Briefly, a thorough and complete physical examination is given an applicant before the applicant is permitted to go to work. From the findings of the examination, the applicant is classified and placed in one of four classes—X, XX. XXX or XXXX. A class X applicant is one in whom no physical defects are found, and is a rare individual. Class XX represents an applicant in whom slight physical defects are discovered, but none of the defects discovered are of sufficient magnitude to necessitate his being given special work. Class XXX includes one in whom certain physical defects are found which are of sufficient magnitude to require the applicant to be placed on certain definite jobs. Class XXXX includes the individual who, because of physical findings, is rejected. In this group would fall the advanced tuberculous, the heart case that has passed the stage of compensation, the venereal, infectious or contagious diseases, trachoma, certain mental and nervous diseases and certain skin diseases. About two and one-half per cent of the number examined fall in Class XXXX, but this figure changes to represent about one per cent when consideration is given to the conditions of those individuals which can be corrected or cured—such conditions as found in the venerals, the trachomas, or the acute and contagious diseases.

The physical examination permits the applicant to be placed at work that he is able to do because of his physical and mental qualifications. Likewise, he is the employee who will stay on the job and the one who will have a satisfactory rating in so far as freedom from accidental injuries is concerned.

Several cases in which physical defects were clearly the cause of accidents, were cited by Dr. Frechtling. Physical examinations revealed the trouble and permitted it to be corrected.

Dr. Frechtling advised that the time of physical examination is an excellent time to begin the campaign of safety education, a campaign which must be continued from the

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of October 31, 1928

Participant	Mill	Rate	Participant	Mill	Rate
Kimberly-Clark Co.	Neenah	0	Union Bag & Paper Corp.	No. 5	.38
U. S. Gypsum Co.	Gypsum	0	Union Bag & Paper Corp.	Allen	.48
Upson Co.	Board	.15	Kimberly-Clark Co.	Atlas	.56
International Paper Co.	Webster No. 9	.15	Lincoln Pulp & Paper Co.	Lybster	.60
Gardner & Harvey Co.	No. 3	.16	Lincoln Pulp & Paper Co.	Lincoln	.82
Adams Bag Co.	Chagrin Falls	.18	Mead Pulp & Paper Co.	Peerless	1.22
Gardner & Harvey Co.	No. 1	.20	Union Bag & Paper Corp.	Penimore	1.97
Gardner & Harvey Co.	No. 2	.24	Northwest Paper Co.	Brainerd	2.06
Bergstrom Paper Co.	Neenah	.25	Lincoln Pulp & Paper Co.	Sulphite	2.60
International Paper Co.	Winnipiseogee	.35			

Group A—Nekoosa-Edwards Paper Co., Combined Mills .49 Group B—International Paper Co., Niagara Falls .47

No report for October: International Paper Co., Riley; International Paper Co., Livermore; Robertson Paper Co., Montville.

entrance of an employee into service until the time he leaves. Interest must be stimulated in safety and workers should be made safety conscious. The spasmodic safety week or month, unless it is preceded and followed by just as much work as is put into the week or month is, according to the doctor, futile in results. It is not enough, he said, to teach safety or preach safety; the big thing is to practice safety. He called attention to the friendly interest of a foreman in introducing a man to his new job as conducive of the best relations and returns for all concerned.

It was recommended that a thorough and careful investigation should be made of every accident, the cause determined and eliminated. Records, giving full details, should also be made, classified and kept on file. These records should be studied. The subject of plant cleanliness and orderliness was also suggested.

In concluding his remarks, Dr. Frechtling said that this work must be done wholesouled, honestly, and fairly, and without any maudlin sentiment.

Discussion—Many questions developed from the presentation of Dr. Frechtling's paper and the discussion which followed was a most helpful one. In answering the questions asked by a number of the safety leaders present, Dr. Frechtling stated that in the beginning of his work at Champion that 100 per cent of the old employees did not subject themselves to physical examinations. The examinations were first started in July 1919. If an old employee, who had not been examined was transferred from one position to another, he would be examined before taking up his new duties. A man at time of physical examination is indexed as to his mental reactions. Only two or three men in ten years who have made application for employment, have refused to take the physical examinations. During the examination of the prospective employee, a certain confidence is established which permits the examiner to inform the one being examined about the safety program and that the entire organization believes in safety. Workers with hernias are advised to wear trusses, and it is seen that such trusses are worn. Every employee must be able to read and write. An age limit for the new man is set at 45 years.

Ringworm cases, according to the doctor, are infrequent, as are skin diseases from dust, etc. Tar and asphalt, however, will develop skin diseases. The extent of the eye examination given at the Champion plant was described and a plan suggested for a small plant. When glasses are required, the worker is referred to an eye specialist before being taken into the organization.

The doctor recommended a full examination made at one time, and stated that small organizations might have one man function among a number of plants where such a proposition was feasible. The examination of the machine tender should be different from the man down in the ranks.

In outlining the procedure in making the examination, he stated that it was as complete as the ordinary $5,000 or $10,000 life insurance examination. The examination covered the man from the top of the head to the soles of the feet.

The attitude toward wearing shoes around a paper machine was discussed. Dr. Frechtling advised that shoes be worn and stated that the wearing of shoes relieved accidents, such as cut feet, injuries to feet caused by dropping weights, etc. It is not compulsory to wear shoes at time of wash ups. Men should be advised when working about a machine to dry feet well and to dust with powder to reduce the tendency of foot troubles.

A man with one eye applying for work is rejected while a man on the job with one eye is retained.

In discussing questions relating to the first aid equipment, Dr. Frechtling said that a lot of equipment was not necessary. The room should be properly located, ventilated and lighted. A stretcher should be supplied as well as antiseptics for cleansing wounds, gauze, cotton and a few instruments—forceps and scissors, with solution for their sterilization. He cautioned against placing a wound in water and emphasized the necessity of keeping everything clean and orderly. Basically, he said things which were done in a large plant ought to be done in smaller organizations.

R. T. Houk on Safety Education

R. T. Houk, vice president of Mead Pulp and Paper Co., Dayton, Ohio, was next introduced by Mr. Hiers to talk on Safety Education.

Mr. Houk first commented on the splendid paper of Dr. Frechtling and the discussion which followed it. Then he mentioned his interest in the safety program and of the work which was being done along those lines. He called attention to the posters of the National Safety Council and stated that bulletin boards used to display these posters would be a start in the right direction. No concern, said Mr. Houk, is too small to avail itself of the services of the National Safety Council. Likewise, the small concern can afford either a trained nurse or some one capable of being trained to handle first aid. The question of safety education is one of the most important questions to be met in any enterprise in the opinion of Mr. Houk. He stated that executives were often lax in these matters because they do not have proper information as to benefits, etc.

In the first place, it is difficult to estimate loss resulting from accidents. There are not only the serious losses to the employees, but also to the management. A safety program will aid in reducing these losses, and cannot help but impress each employee that the management is interested in his success and welfare.

Treat men squarely and fairly, said Mr. Houk, and they will pay big dividends. He mentioned that there were unavoidable accidents, but the majority of accidents were avoidable. Proper education will bring full realization of value of safety work. For best results, it is essential that the work have the co-operation of the executives. The executives cannot help but realize the value of the work if they are given a few figures.

Safety work has reduced the number of accidents, lessened the loss of wages, decreased the number of lost days, decreased compensation and lessened doctors' fees. The little plant or the big plant can invest money in such a program that will pay them real dividends.

Mr. Houk called attention to a few industrial pioneers, who in 1908 organized the safety movement, and mentioned that shortly after the National Safety Council was organized by a small group of manufacturers. The Council now represents nearly 10,000,000 men, the employees of a large number of manufacturers.

Workmen's compensation laws followed by the organization of the Division of Safety and Hygiene under the Industrial Commission of the State of Ohio came along after the organization of the National Safety Council. He stated that the Division of Safety and Hygiene was going to do much good for both employees and management.

The success of methods used in putting across the safety program is dependent upon proper engineering, education and enforcement. With many hazards in the paper mill, it is possible to make wonderful returns when all are properly educated, said Mr. Houk in his concluding remarks.

First Aid Practices—Considerable discussion likewise followed Mr. Houk's presentation. Most of the discussion was relative to organization of safety work among the plants of the Mead Pulp and Paper Company. Ernest Augustus, of the Chillicothe plant, stated that in the plant at Chillicothe, a man on duty in the timekeeping office, trained to give first aid, made contacts with the men after 4:30 P. M. A nurse or doctor might be called at such time as deemed necessary. An investigation is made of each accident as soon as possible after the accident occurs. If an accident occurs during the night and the injured employee is not back on the job, the nurse visits at the home of the worker to ascertain his condition. The plant physician reports at the mill at definite times during the week. In continuing his remarks, Mr. Augustus called attention to the fact that the American Red Cross would send an instructor to the individual plant to teach men in first aid practices. The men would be trained to render first aid and to handle such cases as broken bones, dislocations, resuscitations, etc.

In closing the discussion, Mr. Houk invited everyone present to visit the plant at Chillicothe and to learn first hand the work which was being done.

C. G. Barth, safety engineer of the staff of the Division of Safety and Hygiene, was then called upon by Mr. Faist to present a few statistics relative to the pulp and paper industry of the State. Mr. Barth briefly outlined over a period of several years the trend in the safety movement in the paper industry of the State, and called attention to the number of accidents in a number of industrial classifications within the industry over the same period.

New Officers Elected

Following Mr. Barth's brief but interesting remarks, the chairman of the nominating committee read a report recommending officers for the ensuing year, which officers were unanimously elected as follows: chairman, Harry E. Hiers, The Ohio Box Board Company; vice chairman, Marion Page, The Richardson Company; secretary, Robert H. Siegfried, The Franklin Board & Paper Company.

Such enthusiasm and earnestness as was manifested by this group of Ohio safety workers makes it possible to realize what can actually be accomplished throughout each of the various pulp and paper producing states of this country when the right kind of co-operation is developed.

New York State Safety Meeting

Regional Conference of Pulp and Paper Section Held at Syracuse

THE New York Pulp and Paper Section of the National Safety Council held a most interesting conference on safety in pulp and paper mills at Syracuse, N. Y., December 4, 1928. This date likewise formally opened the meetings of the twelfth annual Industrial Safety Congress of the New York State Department of Labor at that city and whose sessions extended throughout the week.

Many worth-while topics were brought up for discussion, which, due to the informal character of the meeting, as well as the fact that no set program was strictly adhered to, might otherwise have remained untouched. Samuel Pruyn, of Finch, Pruyn & Company, acting regional director of New York State, was in the chair. Those in attendance numbered approximately twenty, representing various mills throughout the State, the Department of Labor, and officials of the National Safety Council.

Morning Session

Mr. F. P. Stanley, vice-president of the Glens Falls Indemnity Co., Glens Falls, N. Y., presented a very interesting paper on "Safety Organization in A Pulp and Paper Mill", which was followed by discussion. Mr. R. B. Morley, secretary, Industrial Accident Prevention Association of Ontario, next presented a paper on "Making Safety Interesting To The Man On The Job". Discussion brought out the fact that this subject merited careful consideration and thought, as shown by the many different methods which are in use. As a means to this end, posters in general are used, although there was a divergence of opinion as to the proper type to use in order that the best results might be obtained. Artistic posters apparently are used in the majority of mills, although several mills resort to such means as blackboards upon which the slogan may be readily changed and without effort. Printed slogans on contrasting backgrounds are used in some cases. It was generally agreed that the bulletin board must be conspicuous, clean, and placed in a position to be seen by all employees daily. Slogans bring better results when changed frequently, one mill changing its slogan every 48 hours. The general bulletin board should be supplemented by warning signs placed in a conspicuous spot near dangerous machinery. The use of a large board containing only one slogan appears to carry more effect than when the board is covered with several slogans, clippings, etc.

Mr. John Lundrigan of the International Paper Company, gave an impromptu address in which he stressed the fact that accidents must be regarded in the same light as spoilage of product, due to the fact that both add to the cost of production and reduce profits. To this end the foreman should be thoroughly grounded and sold on safety in order that he may assume his share of the responsibility for accidents, as well as to have a definite incentive for the education of his men along safety lines. Mr. Lundrigan also expressed his belief that the use of mechanical safety devices is not a cure-all for accidents, but must be supplemented by wholehearted education of every man on the job. Efficient teaching of the proper manner in which a job should be performed is in itself a great aid in reducing accidents.

The necessity of physical examination of all employees was discussed with much interest by all present. It was generally agreed that rehabilitation was necessary if physical examinations were required. Opinions differed relative to the burden of cost for rehabilitation, some contending it should be borne by the organization, whereas others felt it largely depended upon the nature of the individual case.

Afternoon Session.

The afternoon session opened with a display of various types of goggles in use at the present time as a means of accident prevention. This display was sponsored by the Wilson Goggle Company.

Mr. M. H. Christopherson, Director of Service, State Insurance Fund New York City, spoke on the subject of accident costs and means of prevention with particular emphasis on the type of accidents most common in pulp and paper mills. The greatest number of accidents for the years 1926-1927 resulted from chippers, splitters, grinders, beaters, and the paper machine. From the latter source calender stack accidents predominated. Mr. Christopherson, stated than an efficient safety program might be inaugurated by adhering to the instructions given in the Government Code covering safety measures in pulp and paper mills, and which is in the form of a printed bulletin. He felt that it might even be desirable to place a copy of this pamphlet in the hands of every man in the mill. Prior to the education of employees, however, it is necessary to have the mill efficiently safeguarded by mechanical means.

Following this paper the meeting was opened for general discussion. Calender accidents were discussed and the opinion was expressed that the bottom nip should be safeguarded if possible. It was agreed that the use of a doctor for this purpose only interfered with proper production. A guard consisting of two boards at right angles is in use in several mills as a safety device for this particular hazard. The various causes of accidents resulting from calenders was also discussed. The compacting of broke, by sending it through the stack, was cited as a hazard and a practice to be prohibited.

The discussion of accidents due to wood hooks, picaroons and like tools also received some attention. The causes of such accidents may be traced to dull or poorly balanced hooks, or improper teaching of their use. Much interest was aroused by the description of a balanced hook in use at one of the northern New York mills.

Goodrich Man Honored by U. S.

Captain Walter L. Glass, former Syracuse University star oarsman, Forestry '17, is the only survivor of four world war heroes cited recently in War Department orders. He received a silver star and a citation for gallantry in action while a first lieutenant with the machine gun battalion, Twenty-seventh Division, during an attack on La Boux farm.

Captain Glass has charge of the Paper Mill Division, B. F. Goodrich Rubber Company, Akron, Ohio.

Charles Bruce White, Chicago representative of the Cochrane Corporation, Philadelphia, and vice president and general manager of the Cochrane Engineering Company, Chicago, died at his home in Chicago, October 16, 1928. Mr. White was born in Nova Scotia in 1864. He came to Chicago at the age of thirty-four and in 1901 became associated with A. Sorge Jr. & Company, and upon the death of Mr. Sorge, seven years ago, he was made vice president and general manager of the Cochrane Engineering Co., which succeeded A. Sorge Jr. & Company.

Miami Valley Paper Makers Meet

Waste Elimination and Stream Improvement Discussed

ON NOVEMBER 22, 1928 at the Manchester Hotel, Middletown, Ohio, was held a joint meeting of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Association, Technical Association, and Paper Manufacturer's Association. Invitations were extended to all paper manufacturers in the State of Ohio.

The program consisted of an afternoon and evening meeting. The afternoon session was in the nature of a round table discussion with Wilson W. Galloway of the Hager Straw Board and Paper Company presiding. The evening meeting following dinner included short talks by C. M. Baker of the American Paper and Pulp Association and Mr. Waring of the Ohio State Department of Health.

In opening, Robert L. Eminger, national secretary-treasurer of the Superintendents Association, made a few brief remarks developing the setting for the meeting, and then introduced Mr. Galloway as chairman.

Round Table Discussion

The subject of the round table discussion over which Mr. Galloway presided was on elimination of waste and stream improvement. In his opening remarks, Mr. Galloway mentioned that there were certain fundamental lines along which representatives of different mills can work in studying the problem of eliminating waste and stream improvement even though the products of the different plants might vary. He called attention to the activity of the national committee of the American Paper and Pulp Association in Wisconsin, Michigan, Pennsylvania, New York and other states, and mentioned that some of the states were feeling around for a solution of the individual mill problem. He stressed that it was desirable to prevent duplication of effort in this experimental work in order to save money and time.

In Ohio, according to Mr. Galloway, the problem must be faced by the manufacturers of fine paper, paperboard, and straw papers, mentioning at the same time the individual problems of the creamery, tannery, and steel industries.

In considering the problem from the papermakers' viewpoint, it becomes a question of best methods of utilizing mill wastes. Mr. Galloway mentioned that many interesting facts had been discovered by individual mill workers and that this work might be discussed in round table to the benefit of the whole industry remembering that the picture must be seen as a whole.

In considering a waste utilization program, Mr. Galloway raised three questions, which in the main, were:

(1) Can we cut down the amount of waste from pulp and paper mills?

(2) If this waste can be reduced, will the principle of operation allow the same speed and efficiency in the manufacturing operations?

(3) If certain materials and chemical constituents of the waste must be removed, what disposition can be made of the clarified effluent and the sludge or solids?

In continuing his remarks, he stated that the Superintendents Association had frequently discussed the waste disposal problem to the mutual benefit of the membership. He then welcomed the visitors representing the manufacturers and explained that Robert Eminger and Thomas Harvey were to be thanked for the meeting.

Following these remarks, Mr. Eminger explained how the idea of the meeting grew, mentioned the status of the waste disposal program in Louisiana and the necessity of leadership from the American Paper and Pulp Association. In planning for the meeting, he mentioned that it was not only the members of the Superintendents Association and Technical Association of the Miami Valley who were requested to be present at the meeting, but that invitations were sent to each mill in the State. He then requested, in opening the round table discussion, that each individual taking part should simply give as much information as it was proper to do.

In the discussion which followed, the work of a number of different plants producing various grades of paper were described.

Strawboard Mill Reduces Waste—The waste of a plant manufacturing nine point straw, for example, was said to have been reduced approximately 50 per cent over what it was formerly. This saving was effected largely by collecting the water from the paper machine and using it in the beaters. Some changes were made in the manufacturing process. An increase in temperature was noticed all along the line. Less lime was necessary for cooking. Recirculating the water kept the lime content high. Only recently, it was pointed out that water from the whipper and first press, drained from the machine, was used as shower water with indications that point to the possibility of using such water permanently for the showers without trouble. Water removed from the wet end of the machine was used to slack the lime and to wet the straw in the rotaries. No slime, felt, or washing troubles have been experienced. Additional steps suggested were to use top water of the settling basin in the plant, since the necessary settling time was short. It is planned to try the use of a Dorr tank in this plant with the belief that for handling sludge in this manner it sets a precedent.

Book Mill Employs Dorr System—The methods employed in a book mill were then described. Through the use of a Dorr system in this plant, it was said, that the loss had been cut tremendously. All white water in the plant goes to the Dorr where the stock is permitted to settle and the solids pumped to the beaters, while the clear effluent is used on the showers. Even with the present accomplishments, it was believed that further improvements could be effected.

In further discussing the waste problem of book mills, it was emphasized that such work as had been done aided in promoting public health, and in maintaining the natural beauty of scenery. At the same time, it was done with profit to the plant.

It was stated that one tank was used for each machine, each tank having a capacity of 375,000 gallons. Sludge from the bottom of the tanks is drawn off uniformly and reused. The plant has gone a long way toward closing the system. A weir with automatic sampling device has been installed to make more accurate determination of present losses. The entire system was said to work satisfactorily because the mill produced the same grade of paper constantly.

It was pointed out that a vacuum filter, when properly installed, might give slightly higher efficiency. The principle of the filter and the use of sweetener stock was described. One advantage claimed for the vacuum filter was that the recovered material did not have to be used back in the beaters.

It was pointed out that through the use of the Dorr system, slime did not cause a serious problem, and that slime trouble would depend on the grade of paper produced. Tests made on wastes from the plant to determine toxicity and effect on fish, etc., were said to be conducted in the laboratory. Necessary equipment for these tests are part of the regular laboratory equipment. Through such work, it is the hope of the plant to keep ahead of the desires of the State Board of Health.

In another plant making somewhat similar papers, as well as bond, an installation of cone type concrete save-alls were said to give trouble with slime and dirt. Mechanical save-alls have been substituted for the cone type installation to recover the stock from each machine. The discharge water from the save-all is reused in the beaters while the recovered stock goes back to machine chest. Any unused water is passed over a vacuum filter and is even further treated in the book stock plant. Practically all fiber and clay in the

waste was said to be recovered. The problem being faced at the present time is a study of the waste from the conversion plant.

Board Mill Reduces Water Consumption—A board mill in another instance needed more water. Six wells already in use did not supply sufficient water to operate the plant. Approximately 28,000 gallons of water were being used per ton of finished board. Estimates showed that an expenditure of $25,000 to $30,000 would be required to obtain the necessary water. Without making this expenditure, but by closing up the system, the water consumption per ton of board has been reduced to about 3,000 gallons. A 4-inch pipe was said to be sufficiently large to handle all sewage from the mill. At first there was trouble with slime, and washups were frequent, but now it is possible to run a month without a washup.

Other interesting work in several board mills was also mentioned. The use of mechanical save-alls was briefly described.

Oliver Filters in Colored Specialty Mill—In a plant manufacturing colored and white specialties, it was suggested that a recovery system was limited to mechanical filters. At present, two Oliver filters, one for each paper machine, are being installed. It is planned to use the filtrate on the showers and for washing rags. At time of a color change, the recovered stock is to be discharged in a rag drain. After a sufficient quantity has been collected, it is to be cooked in a rotary, washed, and bleached. In this way all stock will be used, even on a color change. The coloring of water in the stream by paper mill dyes was briefly discussed. Scarlet, for example, was said to color the stream but was not injurious to fish life. Because of public sentiment against such coloring of the stream, it is planned to bleach the water with liquid chlorine. It is thought that the color will be killed very easily through this method.

In another instance, the difficulty of holding color in the closed system was briefly mentioned.

Other Industries Add to Sewage Problem—The situation in the paper industry from the standpoint of stream betterment was then stated to be a question of dollars and cents and the betterment of stream conditions. The paper industry was said to be only one of the many industries which are influencing factors in the stream betterment program. It was said that the priority use of water was water supply. Damage from municipal sewage was described as greater than the damage from industrial wastes. Municipalities were being encouraged to better the condition of sewage effluent. The waste from the by-product coke industry in the form of phenol had a damaging effect on the stream. It left taste in the water. The effect of this taste on the public was pronounced. A clean-up was demanded. It was said that one plant in the Pittsburgh district would ruin Cincinnati's water supply. Through a co-operative plan of study or research and better housekeeping, it has been possible to eliminate this problem. The coke plant researches made possible the recommendations of five different kinds of recovery plants.

The canning industry also offered a troublesome problem. The industry operates during the dry season on small watersheds. By encouraging researches and appointing an engineer, a progress report has been made as well as some installations of recovery equipment. The work of the dairy, steel and beet sugar industries was briefly described as was the work of the paper industry in the State of Ohio. The importance of biological oxygen demand tests was emphasized as well as the need for uniform methods of measuring wastes and uniform methods of analyses.

Small Loss from Tissue Mill—An engineer from one of the vacuum filter manufacturers had made a study of the effluent from one of the tissue mills. The cylinder machines used at the plant were equipped with 90 mesh wires on the cylinder molds. No filler was used in the stock. From his survey, it was concluded that the loss of stock was insufficient to justify the expenditure for a vacuum filter save-all installation. The only losses from the plant that might cause trouble in a stream were said to be the wash water from the beaters, lime, and bleach.

Chlorine as an Aid—The use of chlorine in the problem of waste elimination was next discussed. It was stated that in one board mill, where constant research in the reuse of white water is in progress, it prevented the formation of slime. The use of chlorines seemed to be preferred as an aid in closing up systems.

The benefits from the use of chlorine in such systems were said to be: reduced water consumption per ton of product; increased heat efficiencies in process operations; reduction of clean-up frequency; increased life of felts; less steaming and acid wash for cylinder molds; cleaner pipe lines; sterilized product; less alum required; higher efficiency from steam condensers; higher filter plant efficiency; less loss and shrinkage from fermentation in the plant and reduction in stream pollution.

Chlorine has been commonly used in the water supply to the mill and in the head box of the paper machine. The amount of chlorine required varied according to statements from one to eight pounds per ton of finished product.

It was claimed that the use of chlorine produced froth, destroyed color, and decreased sizing. This opinion was refuted by statements that it was necessary to study carefully the quantity of chlorine that should be used, that too much should not be used, and frequently when troubles developed it was because too much was used.

Utilization of Waste in the Plant—The problem of waste elimination and stream improvement was then analyzed. In this analysis, the problem was stated to be a question of the utilization of waste and materials within the plants, the handling and disposal of residual wastes and surveys of the streams. The first attack should come, it was said, from within the industry. Some branches of the industry were stated to permit the reuse of all waste materials, while other branches might not be in position to do so. The use of fiber in lower grade products and the possibility of making laps from waste fiber were suggested. It was mentioned that in making colored papers, if filters were employed, a readjustment of color might be necessary. To produce the proper psychological effect upon the public mind, it was suggested to keep appearances up and to avoid dirty effluent going into the streams.

In addition to conserving an adequate supply of water for industry itself, the control of stream pollution from the standpoint of the paper industry has aided in saving fiber and conserving the water itself. First consideration to closing up the system and a reduction of the amount of water to a minimum were suggested as important steps in this work.

The co-operative research in process of organization and the private research of individual mills was briefly outlined. It was said in some cases that the information obtained through private research was not being given out. Better results, it was claimed, would be obtained by pooling interests and it was suggested that a more free exchange of ideas was needed.

In closing the afternoon program, Mr. Galloway said that the meeting and discussion showed there was a problem which needed solving, that progress was being made in solving the problem, and that it was paying the mill that was pushing a solution to it. He stated that co-operation with the State organization was better than an attitude of coercion.

Short Talks Following Business Meeting

Immediately following dinner a brief business meeting was held and it was decided that the next meeting of the Miami Valley Division of the Superintendents Association should be held on December 29, at Hamilton, Ohio.

Board of Health's Work—At the conclusion of the business meeting Mr. Galloway introduced Mr. Waring of the Ohio State Department of Health to speak on "Past, Present, and Future of the Board of Health's Work With Us."

Mr. Waring stated that the department was pleased to give information to the public about its work, that the education of the public was necessary, and that the public was prone to judge what it saw and heard. It was, therefore, essential that the public be given correct information and that enough data be given to permit the public to form opinions on whether the matters were handled constructively.

The old regime was said to use prosecuting, destructive

methods which caused such an industrial reaction that no effort was put forth to correct conditions. At this time, the attitude of the public began to show itself, and results before it was too late were demanded. Constructive legislation was enacted in 1925, which invested power in the Health Department in handling the stream pollution problem of the State.

The primary use of streams, according to Mr. Waring is public water supply. In studying the pollution problem it was found that the cities' own municipal wastes were most damaging. Much work has been done in the few intervening years by the municipalities. Activity is going on within the Health Department although some of the workers are held back because of lack of transportation facilities. It was suggested by Mr. Waring that the department should be given transportation, and that they desire district engineers with a supervisory board in every district. There should be representatives on the board of agencies that are interested in cleaning up streams. Continuing his remarks, he stated that progress from 1925 to date was remarkable.

C. M. Baker Urges Co-operation—Mr. Galloway thanked Mr. Waring for his talk and then introduced C. M. Baker, sanitary engineer with the American Paper and Pulp Association. With a few humorous stories, Mr. Baker introduced his subject and stated that industrial wastes utilized the purifying resources of the streams and interfered with the normal process of water purification. He discussed the use of streams for recreational purposes and stated that most men fished for the privilege of getting out into the open. He placed the fishing value of Wisconsin at 10 to 20 million dollars annually, and the tourist trade in the same State at about 200 million dollars a year. Similar conditions were said to exist in Michigan as well as in several other states.

The problem of stream improvement was classified according to utilization of the waste within the industry, treatment or disposal of the residual wastes, and stream surveys or the effect of the waste upon the stream. A survey of the paper industry was published in the October, 1928 issue of THE PAPER INDUSTRY. In this survey, it was stated that the industry was now making a net return of five million dollars on the value of fiber returned annually and that the industry was still losing six million dollars annually in fiber loss that should be returned into process, based on efficiencies that are being obtained in the better mills. He suggested the advisability of closing up the systems and of reducing the total volume of waste and thus the amount of waste. Recovery processes, said Mr. Baker, will be developed so that no treatment will be necessary.

Mr. Baker mentioned the work of a number of branches of the industry, and stated that the paper industry was taking up the problem as a definite, national program. The subject was discussed at the February, 1926 convention of T.A.P.P.I. and the Technical Association recommended that the American Paper and Pulp Association take up the work. A committee, including one sanitary engineer, met in Chicago and recommended to the association that a sanitary engineer be employed and that voluntary funds be obtained from the industry to support the work. Funds came slowly, but in August, 1927, funds were raised and Mr. Baker employed to take up activities in November, 1927.

In mentioning the function of his work, Mr. Baker stated that it was essential to know the nature of research being done by the mills, and that it was desirable to have co-operative researches in various branches of the industry. He told of attempts to organize co-operative research with the individual groups. A definition for shrinkage was requested. The common interpretration of shrinkage is that it is the difference in weight between the raw materials put into the paper and the finished product. Losses have been camouflaged by the word shrinkage. Actual losses should be separated from shrinkage.

In concluding his remarks, Mr. Baker requested consideration for the recirculation of water within the plant, the use of filters, save-alls, sedimentation systems and the use of coagulants. By forgetting fixed, conceived ideas, and by analyzing the problem, much can be done in closing up a system without jeopardizing the final product. He suggested co-operation with the health department, Izaak Walton League, and different mills, and recommended free exchange of ideas on the problem of stream polution.

Mr. Galloway thanked Mr. Baker for his talk and, after a few remarks, the meeting was adjourned.

The interest manifested in the round table discussion of the afternoon and in the material presented during the evening was indicative of the importance of the problem of waste elimination and stream improvement to the paper industry.

New Officers for Connecticut Valley Supers

New officers to serve during the ensuing year were chosen at the regular monthly meeting of the Connecticut Valley Division of the American Paper and Pulp Mill Superintendents' Association held at Holyoke, Mass., November 24. The division now has its own headquarters in the Lincoln Building and in respect of attendance and interest in the proceedings the meeting was one of the most successful of the season.

John J. White, of Holyoke, was elected chairman with Matthew V. Horgan, Holyoke; Lewis E. Weiser, New Haven, Conn.; and Arthur B. C. Drew, New Bedford, Mass., vice chairmen. Charles N. Mooney, Lee, Mass., was elected treasurer and Andrew T. Barnett, Holyoke, secretary.

The new board of governors consists of William B. Clements, Fitchburg, Mass.; Roger McCorkindale, Holyoke, Mass.; Joseph Bario, Holyoke, Mass.; Thomas T. Rogan, Fitchburg, Mass.; Edmund H. Gibbons, Lee, Mass.; W. H. Croft, Turners Falls, Mass.; Chas. D. Higgins, Bellows Falls, Vt.; John Leishman, Windsor Locks, Conn.; Joseph A. Moses, Fitchburg, Mass.; H. C. Parsons, Turners Falls, Mass.; Theodore M. Pomeroy, Dalton, Mass.; George Raynor, Norwalk, Conn.; Stephan W. Smith, Holyoke, Mass.; Thomas Duff, Holyoke, Mass.; A. J. Loman, New London, Conn.; Eugene W. Peppard, Winchester, Mass.; Frank S. McDonnell, Boston, Mass.; William E. Hogan, Bridgeport, Conn.; Leon M. Yoerg and William L. Nixon, Holyoke, Mass.

It is not generally known that the Connecticut Valley Division functions in the four States of Massachusetts, Vermont, Rhode Island and Connecticut, and Roger McCorkindale, chairman of the nominating committee directed attention to this in his report. He said that in the choice of officers the nominating committee had made an effort to recognize all sections of the territory served by the division.

Following the report of the committee on headquarters a vote of thanks was tendered to Messrs. White, Reardon, and Kennedy comprising the committee. The new rooms are attractively furnished with all conveniences for business meetings as well as social gatherings and it is expected that members will make frequent use of them. It was voted to authorize Chairman White to arrange for a joint meeting of paper mill superintendents and the executives of printing industries at the Hotel Nonotuck some time next January.

Appropriate resolutions were adopted on the death of Edward F. Driscoll and these resolutions as well as others passed previously will be framed and placed permanently in the headquarters of the association in the Lincoln Building.

William B. Clements, chairman for the past year, presided at the meeting and expressed his gratification to the members for loyal services during his term of office.

Mr. White, chairman-elect, announced that a report would soon be presented concerning the formation of a new Super-Craftsman Club, the membership of which will consist of Connecticut Valley superintendents and printing craftsmen, with associate members from kindred industries.

Stanley G. Linney

Stanley G. Linney, secretary and treasurer of The Ryther & Pringle Company, Carthage, N. Y., passed away November 14, 1928, at the age of 53 years, following a long illness. Mr. Linney spent practically his entire life in the pulp and paper business. Prior to his connection with Ryther & Pringle, he was for many years employed by the Island Paper Company, West Carthage, also the Newton Falls Paper Company, Newton Falls, N. Y. The deceased is survived by his widow and two children.

Buffalo Forge Company Completes Half a Century

The year 1928 marks the Golden Anniversary of the founding of the Buffalo Forge Company, Buffalo, N. Y., well-known manufacturer of ventilating equipment.

Fifty years ago, Charles F. Brunke and Charles Hammelman, partners, began the manufacture of the portable forge originated by Mr. Hammelman, and after a year of disappointments, the two partners sold to W. F. Wendt, a young bookkeeper, a half interest in this apparently hopeless business. Their place of business was then located in a small shop in a very humble building in Buffalo.

Up to that time, practically all the forges made in this country were operated by bellows. Several companies had tried to market forges with blowers without success. However, by preserving and making use of new ideas, the little forge concern began to make rapid strides, and by the year 1880 the business warranted the purchase of its own manufacturing plant. The original forge became so popular that the blower was separated from the forge and sold to blacksmiths who already had a brick forge. New and varied styles of forges and blowers were gradually added to meet the requirements of blacksmiths, railroads and all kinds of shops. The product was then introduced in other countries and soon a trade was established in Australia, South America, and many other countries.

In 1884, the company entered the heating and ventilating field which proved just as lucrative as the forge business, and today constitutes the greater part of the factory's output. In 1888, Henry W. Wendt, brother of W. F. Wendt, was admitted to the firm as traveling representative, and closed most of the large orders. The old Auditorium Theatre, Chicago, a relic of World's Fair days, bears the stamp of his engineering. It is thought to be the first downward ventilation system to be installed in a theatre. H. W. Wendt conceived the idea of the down draft forge and this design became very popular throughout the industrial world. Over 95 per cent of the forge shops maintained in the training schools of the country are still using this type of forge.

Willis H. Carrier, for a number of years chief engineer of the company, originated and developed the idea of washing air with water sprays. This was the forerunner of all the present day development and almost universal use of this type of equipment for air washing and air conditioning in the heating and ventilating field.

The business having been substantially established, improvements and additions were made in rapid succession. Branch offices were established in principal cities, and the Canadian Blower & Forge Company was established to take care of Canadian business. In 1903, the Geo. L. Squier Manufacturing Company and Buffalo Steam Pump Company were acquired; the former concern better known in South American countries than in the United States, excelled in the manufacture of machinery for sugar, rice and coffee plantations. Only recently, the Squier Company built two huge plants, one at San Miguel, Porto Rico, and one at La Paila, Colombia, South America. The Buffalo Steam Pump Company was well established as manufacturer of steam and centrifugal pumps when taken over by the Buffalo Forge Company. The main factory of this concern is located in North Tonawanda, N. Y.

Buffalo Forge Co. in 1880

In 1905, the company was incorporated at a million and a half. In 1914 the three plants afforded employment to more than 1500 factory hands, the greater number of whom were skilled mechanics and machinists. The executive, sales, engineering and office force at that time numbered close to 300. In the early part of 1916, W. F. Wendt sold his entire in-

Buffalo Forge Co. and associates today. Center picture—main office and factory of the Buffalo Forge Co., Buffalo, N. Y. Lower right —Buffalo Steam Pump Co., North Tonawanda, N. Y. Upper left—Canadian Blower & Forge Co., Ltd., Kitchener, Ontario

terest to his brother, H. W. Wendt, and the company was then reorganized and the following officers elected, all of whom are still acting: president, H. W. Wendt; vice president and treasurer, E. F. Wendt; vice president and secretary, H. W. Wendt, Jr.; vice president and sales manager, C. A. Booth; assistant secretary, H. S. Whiting.

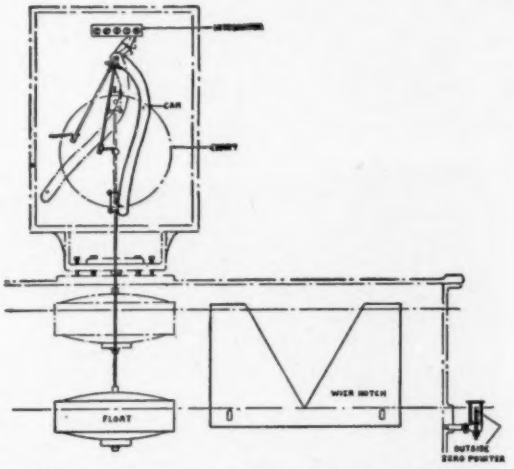
An Improved V-Notch Weir Recorder

If the flow over a weir increased proportionately to the head, the recording pen, pointer and integrator devices could be attached directly to the float rod, giving the simplest possible kind of recorder. In fact, weirs having this property of flow proportional to head have been devised, but they are not satisfactory as weirs. The V-notch weir is unquestionably the best as regards flow properties, particularly where there are wide variations in the rate of flow, since it is accurate at small fractional flows as well as at full flow. Its properties have been exhaustively investigated and it is easily and inexpensively reproduced to correct and standard dimensions.

In order to record the flow over a V-notch on a chart having uniform graduations, however, it is necessary to use some form of rectifying mechanism.

At first thought it might seem a simple matter to attach a cam directly to the float stem so that it would push the pen sidewise the correct distance as the float rose. Due to the fact, however, that the flow over a V-notch increases as the 5/2 power of the head, it will be seen that such a cam would become very steep at the high flow end and there would be a tendency for it to bind. In former recorders this difficulty was overcome by various expedients, as by winding the cam in a long helix around a cylinder and multiplying the motion by means of a rack and pinion, or by laying the cam out in a spiral on a large disk and multiplying the motion by means of a cable and drum.

In the new Cochrane V-notch Recorder, shown herewith, a remarkably simple and effective solution has been found.



By means of an outside zero pointer level with the apex of the notch, it is possible to adjust the V-notch recorder to zero at any time, even when the apparatus is filled with hot water and steam

The cam is hung from pivot bearings and oscillates in a vertical plane, while a roller carried by the float stem and moving up and down in a straight line bears against the edge of the cam, approaching the axis or center of oscillation of the latter at the higher flows. With this disposition of the parts, it is easy to get the required transformation of motion with a cam of comparatively simple form, for as the roller approaches the center of the oscillation its effect in moving the cam angularly is increased just what is required to accommodate the 5/2 power law. A slight biasing weight on the cam keeps the latter always in contact with the roller.

The pen arm is attached directly to the cam spindle; while the visible pointer is mounted on a separate spindle connected to the cam by a link motion. The operation of the integrator is controlled by motion received through a pair of toothed sectors. The positive, direct drive from the float to the recorder pen eliminates the slack or back-lash found in rack and pinion or table transmission and rapid up and down movements of the float cannot put the instrument out of order.

The integrator is of the clock driven type and imposes no restraint upon the flow measuring parts. The gear train consists of spur gears, each pair having a ratio of 10 to 1. There is only one tooth on the pinion and ten teeth on the gear. This one tooth engages for only a part of a revolution, the gear being held stationary during the remainder of the pinion revolution as the remainder of the pinion has no teeth, but is circular and bears between two adjacent teeth of the gear. The result is that two adjacent teeth of the gear,

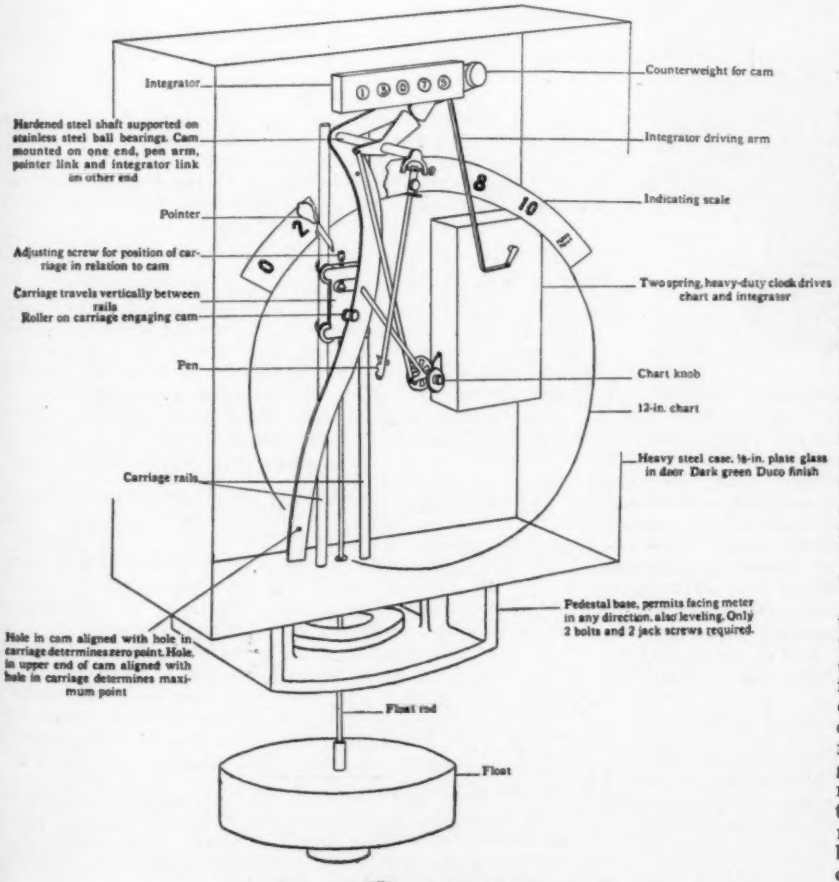
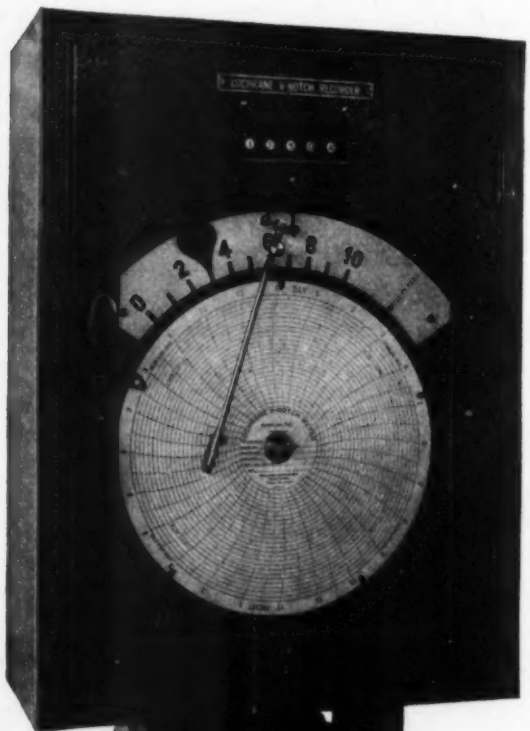

Integrator
Hardened steel shaft supported on stainless steel ball bearings. Cam mounted on one end, pen arm, pointer link and integrator link on other end
Pointer
Adjusting screw for position of carriage in relation to cam
Carriage travels vertically between rails
Roller on carriage engaging cam
Pen
Carriage rails
Hole in cam aligned with hole in carriage determines zero point. Hole in upper end of cam aligned with hole in carriage determines maximum point
Counterweight for cam
Integrator driving arm
Indicating scale
Two spring, heavy-duty clock drives chart and integrator
Chart knob
12-in. chart
Heavy steel case, ⅛-in. plate glass in door Dark green Duco finish
Pedestal base, permits facing meter in any direction, also leveling. Only 2 bolts and 2 jack screws required.
Float rod
Float

Diagram of essential working parts

except the first or highest-speed gear, advances always a whole number at a time. Except for the first dial, there is, in other words, no gradual, continuous movement of the figures, as would be the case were an ordinary gear train used.

Now, the first, or highest-speed gear is advanced by varying small increments which are proportional to the momentary rate of flow. To secure this result, a rod attached to a crank rotated by the clock operates a clutch which engages with the milled edge of a disk mounted on the spindle of the first counter train pinion. Each stroke of the clock pulls the clutch back to the starting point, where it engages



Cochrane Type E, V-Notch Recorder

with the milled disk, and then pushes it forward until the clutch is thrown out of engagement by a cam. The position of this cam is determined by the position of the main cam, and therefore by the rate of flow, the transmission of motion from one cam to the other being made by a pair of toothed sectors. It will be seen that the counting train is thus advanced for each interval of time by an amount proportional to the instantaneous rate of flow and that the result for a longer period of time is totalized or integrated flow.

Only one clock is required and this may be either of a powerful double-spring type or an electric clock may be used where alternating current of controlled frequency is available.

Discharge Coefficients for V-Notch Weirs

The triangular or V-notch weir has the advantage that the head to be measured at small flows is relatively large and that the cross-section of discharge for any given angle at the apex is similar at all heads. For the theoretical equation

$$q = ch^{5/2}$$

James Thompson, who experimented upon V-notch weirs at Belfast in 1858, chose a mean value of c of .305 for a right-angle notch, q being measured in cu. ft. per minute, and h in inches. James Barr, who made several hundred experiments, gave the values shown in the accompanying table for the discharge through a 90° narrow-edge, smooth brass notch with a practically unlimited approach channel.

BARR'S RESULTS FOR THE FLOW OF WATER THROUGH A 90° V-NOTCH WITH UNLIMITED APPROACH

Head in Inches	Value of Coefficient C	Flow in Cubic Feet per Minute	Flow in Gallons (Imperial)
2	0.3104	1.755	10.94
2½	0.3084	3.045	18.97
3	0.3068	4.782	29.79
3½	0.3057	7.002	43.63
4	0.3047	9.750	60.74
4½	0.3038	13.05	81.29
5	0.3032	16.95	105.6
5½	0.3026	21.46	133.7
6	0.3021	26.63	166.0
6½	0.3017	32.49	202.4
7	0.3013	39.05	243.0
7½	0.3009	46.34	288.7
8	0.3006	54.06	338.9
8½	0.3003	62.92	392.0
9	0.3000	72.90	454.2
9½	0.2998	83.33	519.2
10	0.2995	94.70	590.0

These results, which Barr believes to give the true discharge within 1/3 of 1 per cent, are well represented by the formula

$$q = .31358\ H^{2.48}$$

Tests on a notch cut in a steel plate beveled to 1/8 inch, made under the direction of H. W. King, gave the following:

These values are about 2 per cent higher than Barr's, which King explains as being due to the roughness of the steel notch plate. They can be represented quite accurately by the formula

$$q = 2.52\ H^{2.47}$$

in which Q is in cubic feet per second and H in feet.

The flume was 8.05 feet wide and about 5 feet feet deep, and the apex of the weir was 2.0 feet above the bottom of the tank. The head was measured with a hook gauge in a pail attached by a hose to the side of the flume about 6 feet upstream from the weir. The discharge was weighed.

Doebler and Rayfield, who made tests on a 28° 4-foot notch with heads up to 3 feet, report the formula

$$Q = 0.6405\ H^{2.445}$$

V. M. Cone, who experimented on a 120° notch with heads up to 1.35 foot, obtained $Q = 4.40\ H^{2.487}$, while with a 60° notch he obtained $Q = 1.446\ H^{2.470}$.

To obtain the coefficient for a notch of a different angle, modify the coefficient which has been determined by experiment for a notch of nearly the same angle in the ratio of the tangents of the halves of the respective angles.

In order that the flow may be independent of the channel width, the latter, as shown by Barr, should be at least eight times the head on a 90° notch, while the depth of the channel below the apex should be about three times the head with a 3-inch head, and four times the head with a 4-inch head.

M. P. Snow and Company, Chicago, accountants and tax consultants, have found it necessary owing to an increase in business to move into larger quarters. This company is now occupying the entire eighteenth floor of the Wrigley Building, 400 N. Michigan Ave., Chicago.

Advantages of Tracyfiers in Boiler and Turbine Operation

THE detrimental effects of wet steam on engines, turbines, and steam-using apparatus are well known, and the erosive effects and damage caused by the continuous washing away of cylinder lubricants, constant cutting of cylinders, piston rings, valves and turbine blades, due to wet steam are all too common to require much comment.

Conversely, the advantage of being assured at all times that the steam from the boiler drums will be absolutely dry, is fully understood and agreed to by all progressive engineers. This applies to not only those plants using saturated steam, but just as fully to those plants equipped with superheaters. In these latter cases, with moisture present in the steam to the superheaters, the true function of a superheater is partially done away with, and they act as a combination of boiler heating surface and superheater. Since one per cent water in the steam to the superheater causes a reduction of approximately sixteen degrees temperature (at ordinary pressures), it is easily seen that wet steam to the superheater is too costly to countenance without serious consideration. Increasing the superheat ten to twelve degrees means one per cent reduction in turbine steam consumption; therefore, the thermal loss resulting from low superheat is serious and runs up into many hundreds of dollars very quickly.

The Tracyfier, manufactured by the Andrews-Bradshaw Co. Division of Blaw-Knox Company, Pittsburgh, Pa., is designed to remove all moisture from the steam before the steam leaves the boiler drum; i. e., at its source. It is a remarkably efficient mechanical "scrubber" (without moving parts) placed inside the boiler drum, suspended from the top by brackets and connected directly to the underside of the steam nozzle, taking the place of the old fashioned, so-called "dry-pipe." The steam from the boiler passes through the Tracyfier before reaching the steam outlet nozzle on its way to the steam header, or to the superheater, as the case may be.

It has been found that in order to get perfect separation of a liquid from its gas, it is necessary to separate at low velocities, which is the reason for the success of the Tracyfier, based upon this principle. The low velocity steam entering the Tracyfier, which consists of a box-like section containing vertical, gutter-like baffles on both sides, is subjected to a scouring action and deposits its water and any impurities in the gutter-type baffles. These impurities are carried down by the water into a chamber entirely separated from the cleaned steam. This chamber is connected to a trap outside the boiler, and discharges all water and impurities to the sewer.

Survey Shows Big Savings in Turbine Cleaning and Reblading

The following is a report of a survey made by A. C. Nielsen Company, engineers, Chicago, in collaboration with and approved by J. F. Rhoades, chief engineer of the Mead Pulp & Paper Company, Chillicothe, Ohio:

Tracyfiers supplied by Andrews-Bradshaw Company of Pitsburgh have been giving satisfactory results at the plant of the Mead Pulp & Paper Company since 1923. The first Tracyfiers equipment, a single unit regarded as a trial installation, served for about three years and made a performance record which fully justified the further use of Tracyfiers when three 1,057 hp. pulverized coal-fired boilers were installed in 1926.

Plant Equipment—The boilers generate steam at 150 pounds gauge pressure and, with all three units in continuous service, deliver an average of about 150,000 pounds of steam per hour. The superheat is about 50 deg. Fahr., and two-thirds of the total stream is used for power generation in turbines rated at 3,000, 2,000 and 750 kva. respectively. The two larger turbines are of the bleeder type and the third is operated straight condensing. The combined power and process steam load frequently reaches 200 per cent of the total boiler rating.

Make-up water totaling about 22,500 pounds per hour (15%) is supplied from a hot-process softener at zero hardness but with about 22 grains of soluble salts per gallon.

Boiler Performance—The new boilers could deliver steam at least 98.5 per cent dry under most conditions without Tracyfiers, and the superheaters now in use are capable of adding the required 50 degrees of superheat to steam of this quality. The underlying consideration in the installation of Tracyfiers was therefore not to improve superheat, as is frequently the case, but rather to furnish a constant and almost uniform blow-down which would hold boiler concentration at a practical level. The Tracyfiers were therefore installed with drains leading out through the steam drums and into the sewer and the effect is not only to avoid deposition of solids in superheater and turbine passages but to prevent the ultimate return of a large part of this solid matter to the boilers via the condensate from turbines and processing equipment.

Tracyfier Performance and Results Obtained—The ability of the Tracyfiers to deliver 100 per cent dry steam has been fully demonstrated and the good effects of eliminating solids from the steam have been shown to be far-reaching and of material economic value. A complete evaluation of the several benefits cannot be made because the installation of the Tracyfiers was coincident with the installation of the new boiler battery. Several important points can, however, be considered in detail on the basis of actual operating experience.

An examination of turbine blading after one year of operation with Tracyfiers shows no visible evidences of blade erosion by solids entrained in the steam. It is impossible to state with certainty that reblading will be entirely eliminated but it appears conservative to expect that the interval between renewals of first-stage blading will be at least two years longer now than formerly. With five years as the average interval formerly, and with the job costing about $1,500.00, it appears that the average annual reblading cost will be cut from $300.00 to $214.29.

Other and larger gains are also being made. The annual cleaning of all three turbines has now been abandoned. The job formerly cost about $500.00 per year because it was necessary to do the work with a minimum loss of time, employing a large crew of men and paying overtime rates. The blade inspection, mentioned above, showed this cleaning to be wholly unnecessary now and the $500.00 charge is thus creditable entirely to the use of Tracyfiers.

The superheaters appear to have benefited just as the turbines did as a result of having to handle only clean, dry steam. A recent inspection showed the superheater tubes to be in excellent condition, and it has been estimated that about 130 man-hours of labor can now be saved on the three-boiler battery. This will amount to $60.00 per year.

Increased average efficiency of the turbines is the last and one of the most important advantages to be considered in this report. Test data are not available on this particular installation but the effects of solid deposition in changing blade curvature and increasing turbine water rates are too well known to need further discussion. An increase of at least 2 per cent is believed to have occurred in the turbine water rates in the one-year interval between the cleanings formerly required, and the average rate of the turbines can safely be assumed to have been 1 per cent above normal. With steam for which the coal cost alone is about $.155 per thousand pounds used at the rate of 100,000 pounds per hour for 8,760 hours per year the probable saving in steam cost would be about $1,350.00 per year.

Tracyfier Costs and Savings Effected—The following tabulation sums up the several economic gains due to the use of Tracyfiers and shows a gross annual saving totaling $2,003.51.

Against this saving there is a charge of $476.88 per year to cover the depreciation and average interest on the investment in three Tracyfiers and the repair and maintenance costs on them. The fixed charges are figured on the basis of a 10-year life, with interest at 6 per cent. Repairs are negligible except for an occasional baffle replacement and will be covered amply by the 1 per cent allowance shown. Cleaning is done annually, at a cost of $10.00 per unit for 20 man-hours of labor, or, for the entire battery, at a cost of $30.00 per year.

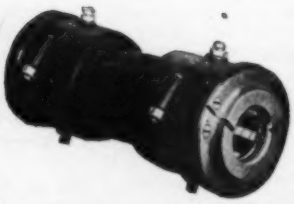
Better Equipment *and better bearings*

A striking example of the type of equipment up-to-date manufacturers are supplying you today is evidenced by the employment of better bearings—Hyatts.

Hyatt Roller Bearings, by their very design, are maintenance savers, power savers, time savers, and are assurance of longer life to the equipment in which they are applied.

In modern, oil tight housings, Hyatts do their work of conservation with no attention other than an occasional lubrication.

Most prominent manufacturers of the equipment you use are ready to furnish with Hyatt Roller Bearings. To enjoy the many advantages of care-free operation specify Hyatts on your next order.



For your transmission equipment use Hyatt Line Shaft Roller Bearings and save 15% of your power bill. You can change over your present plain bearings easily, because Hyatts are made split for quick installation.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

The difference between the above totals—$1,526.63—is creditable as the net anual saving effected by the use of three Tracyfiers. This is equivalent to a net return of 49 per cent on the total initial investment and it must be remembered that improvements in boiler operation have not been considered at all. The engineering department considers that the provision for constant blow-off and the assurance that steam will enter the superheaters dry is in itself such a valuable feature that the cost of the Tracyfiers can be regarded as a justified insurance charge on efficient operation of the boiler plant.

MEAD PULP & PAPER COMPANY
Savings Effected by Andrews-Bradshaw Tracyfiers on Three 1,057 Hp. Boilers

Gross Per Year		
Turbine rebladings: (Assuming 2-yr. increased life)		
Formerly — $1,500 ÷ 5-year interval	$300.00	
Now — $1,500 ÷ 7-year interval	214.29	
Annual saving		$ 85.71
Turbine cleaning:		
None now: Formerly $500 per year for 3 units..		500.00
Superheater cleaning:		
None now: Formerly 40 hr. labor on each 3 units @ $.50 per hour		60.00
Steam, due to 1% gain in average water rate—		
1% x 100,000 lb. steam/hr. x 8,760 hr./year @ $.155 M lb. (Coal cost only)		1,357.80
Total gross annual saving		$2,003.51
Less Fixed Charges and Upkeep on Tracyfiers		
Depreciation — $3,125 ÷ 10-year life	$312.50	
Average interest @ 6%—		
11/10 x $3,125 x .06/2	103.13	
Repairs — 1% allowance	31.25	
Maintenance—		
Cleaning — 20 man-hr. x 3 units @ $.50/hr.	30.00	
Total		476.88
Net Annual Saving		
Difference above		$1,526.63
Net annual return on investment	49%	

Summary

Trial installation of Tracyfier proved successful on one boiler used from 1923 to 1926 and led to further installation of Tracyfiers when three 1,057 hp. boilers were installed.

Object was to hold boiler concentration uniform by diverting solid-bearing moisture from steam and discharging outside of drums to sewer. Year of operation demonstrates success, although boilers are under more than normal load the year around and frequently steam at 200 per cent of normal rating.

Benefits of Tracyfiers seen as:

Increased interval between turbine rebladings, saving $85.71 per year

Elimination of annual turbine cleaning, saving $500.00 per year

Elimination of superheater cleaning, saving $60.00 per year

Decrease of average turbine water rate by 1 per cent, saving $1,357.80 per year.

Gross annual saving totals $2,003.51 subject to deduction of only $476.88 in fixed and maintenance costs, leaving $1,526.63 as a net annual saving to pay 49 per cent net return on investment in Tracyfiers.

Harris J. Behr, formerly associated with the Mechanical Rubber Co. of Cleveland, has joined the sales organization of the Boston Woven Hose & Rubber Co., as special field representative. Mr. Behr has had a wide experience in the rubber industry, having been associated for twelve years with the B. F. Goodrich Rubber Co. of Akron, Ohio, and for the past seven years in the organization of the U. S. Rubber Co. operating through the Mechanical Rubber Division at Cleveland.

The Jeffrey Manufacturing Co., Columbus, Ohio, has appointed Stanley M. Mercier manager of its Boston office.

Co-operating With States In Stream Improvement

Through the activities of its engineer, C. M. Baker, the American Paper and Pulp Association has developed co-operative programs with the officials in a number of States in regard to the improvement of streams with reference to pollution. This is consistent with the policies adopted by the association's committee on Waste Utilization and Stream Improvement, and has constituted one of Mr. Baker's major activities during the past year. This work has been a most important factor in harmonizing the attitude between the various factions, such as the Izaak Walton League and other sportsmen's organizations, State officials, and industry, and thus heading off the tendency that has prevailed in many sections for the development of radical legislation and policies.

Illustrative of this work is the recent development in Virginia. During the past twenty-two years, legislation to prohibit stream pollution has been sponsored in every Virginia legislature by wild life and sportsmen's organizations. Such legislation, however, has always been opposed by industry and failed to pass. This has created antagonism between the various interests.

At the suggestion of Mr. Baker, State authorities called a conference of representatives of industry, the Izaak Walton League, State officials, and municipalities. At this conference the problem of stream pollution and its relation to industry was discussed. A committee was appointed, consisting of representation from the Izaak Walton League, the Virginia League of Municipalities, officials from three State departments interested in the problem, and four representatives of industry appointed by the Virginia Chamber of Commerce. J. P. Hummel, of Hummel-Ross Fibre Corporation, is the representative of the paper mill group, while others represent various branches of industry. This committee has raised a fund of $7,500 to initiate the work prior to the meeting of the next legislature in 1930. Of this fund $5,000 was contributed by the various industries, and $2,500 was appropriated from the State Conservation Fund. At a recent meeting of the committee Mr. Baker assisted in organizing a definite program of investigation and research.

Although many States have legislation regarding stream pollution, such legislation is generally prohibitory rather than regulatory in its nature. The development of co-operative programs in these States has therefore been important, and has been definitely brought about in the States of Minnesota, Indiana, and Connecticut. Developments are also now in progress in West Virginia and New York State. Although co-operative programs had previously been initiated in the States of Ohio, Wisconsin, Michigan, Pennsylvania, and Maryland, much has been done to continue and perfect the activities in these States.

Pulpwood Prices and Transportation Costs

Reports of the paper industry to the Woodlands Section of the American Paper and Pulp Association indicate that the downward trend of pulpwood prices, reported in the second quarter, is still under way. In practically every instance, the average prices for the third quarter are under those reported in the second quarter.

Mill Prices—The f. o. b. mill prices for peeled spruce pulpwood in Main averaged $17.86 per cord in the third quarter, and in New York $18.53 per cord. Rough spruce averaged $13.90 in Maine, $14.54 in Michigan, and $15.40 in Wisconsin. Rough and peeled spruce in Minnesota averaged $12.15 and $17.99 per cord, respectively. These prices are from a few cents to a dollar under the prices reported during the second quarter of the year.

In the Lake States, the price of hemlock pulpwood shows little change between the two quarters, and tamarack and jack pine prices varied only slightly. Southern pine in the South Atlantic region and in Louisiana and Texas also varied but little from the prices reported for the second quarter. The Woodlands Section quarterly summary of the pulpwood situation is based upon the reports from 90 mills in the United States.

Transportation Costs—A recent study conducted by the

A SOLUTION to your Felt Problems

As Appleton Felts and Jackets have helped other mills solve their felt problems, perhaps there is a solution to your felt problems with Appleton Felts and Jackets.

On the threshold of the 38th year in making felts and jackets, the Appleton trademark on the above tag (a reproduction of the tag attached to every felt) is the symbol of ***quality*** and ***service*** — and two outstanding reasons for the wide acceptance of Appleton Felts.

Behind this trademark are the cumulative experience of the past 37 years, a plant that actually controls its product by checking and rechecking all details of manufacture, an organization accustomed to making only quality products, and the reputation for making felts that are today the standard for quality and service.

Submit your felt problems to us. We'll gladly work with you to overcome any difficulties you may now have.

APPLETON WOOLEN MILLS

APPLETON, WISCONSIN

Appleton

Felts and Jackets

Woodlands Section indicates that the cost of transporting pulpwood from the forest to the mill makes up about one-quarter of the total f. o. b. mill cost of wood. The average transportation cost for all pulpwood in the United States amounts to $3.25 a cord. The regional costs vary from an average of about $2 a cord in the South and West to $8.50 and $8 a cord in New York and Pennsylvania. In Maine and the Lake States, costs average around $3.50 a cord.

The regional variation in average costs are responsible to a large extent for the variation in the prices of pulpwood. In the regions which have ample pulpwood supplies, long distance shipment of pulpwood is unnecessary and costs may be low. In the older pulpwood regions, however, local pulpwood depletion has necessitated long pulpwood hauls with the result that costs have increased constantly.

The present high average transportation expenses in the older producing regions indicate the rapidity with which costs increase. In 1900, most mills in these regions used locally grown wood. In a period of three decades, prices have advanced from the level based upon local wood, similar to that which exists in the South and West today, to a higher level which is about three times the cost of local wood.

The necessity for shipping pulpwood increasingly long distances can be obviated only by continual use of forest land, which means forestry. If nearby forest lands are kept in continuous production, the savings in transportation will offset in a large way the costs of forestry. But if forest lands are not used for successive pulpwood crops, a rapid increase in transportation costs is inevitable.

Paper Salesmen and Their Function

There have been several interesting meetings of the New York Division of the Salesmen's Association of the Paper Industry during the past few months. The meetings are held weekly in the rooms of the Canadian Club, Hotel Belmont, New York, on Mondays, beginning with a luncheon at 12:30 P. M. At the last meeting in October, the work of the Lithographic Technical Foundation was described by Prof. R. F. Reed, of Chicago, who gave the members of the division some useful information on the subject of lithographic paper and particularly offset paper, which he said was best made from slack-beaten and hard-sized stock.

Functions of the Sales Department

At the meeting on Monday, November 7, C. R. McMillen, president of the Union Bag and Paper Corporation, was the principal speaker. His subject was "The Functions of a Sales Department," and he began by remarking that at present the paper industry was in a state of economic unbalance, having been undergoing a change of life since the war.

The primary function of a sales department being to sell merchandise, the problem before the salesman was to convince intending purchasers that the product of his firm was of greater value than any similar product. To do this it was necessary for the salesman to have a good knowledge of manufacturing costs, not the economic value of mere cost of materials, or of ultimate article, but the delivered cost of the product.

The Need of the Day—Mr. McMillen paid a tribute to the selling forces of paper manufacturing firms as being progressive and energetic and better equipped with a knowledge of trade conditions than the men in charge of manufacturing departments. The crying need of the day was a good statistical department to make true prices available. A salesman who was not equipped with information concerning market tendencies and the drift of prices was handicapped in his work, so he thought it was time for the salesman "to rise up in arms and insist on getting something to steer their boat by." There was need, too, of better co-ordination between the manufacturing department and the sales department. While it was the function of the manufacturing department to produce paper, the sales department should be depended upon to tell the manufacturing department what should be made, not only as regards quality and quantity, but the particular kind of product. In this respect it should not be the manager of manufacturing who should control production but the salesmanager.

Says Sales Department Should Control Production—Mr. McMillen spoke without notes in interesting, breezy fashion that appealed strongly to his audience. A point made by him was that when a ton of paper is made it should be deeded to the sales department. The men in the sales department are supposed to be merchants and no prideful sales department likes to see goods stored away for an indefinite period, nor does the sales department like to see the wrong goods made. Far-reaching economies would be effected by giving the sales department greater control over production. The purchasing department would be governed in buying supplies by the market outlook as shown by the orders turned in by salesmen.

Fixed and Working Capital—In the paper industry the invested capital per ton of product was very large and required considerable working capital. It may be of interest to note in connection with this statement by Mr. McMillen that while the paper industry by government reports represents a capital of about $1,000,000,000, the annual value of products amounts to about $1,100,000,000.

Mr. McMillen said the paper industry was at the threshold of a new era of expansion and new conditions which would make it bigger and better than ever.

A Pertinent Story

L. M. Alexander, president of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., was a guest of the New York Division and spoke encouragingly of the outlook. He told a humorous story to point his remarks concerning the wisdom of not taking gossip concerning conditions too seriously. Bill Nye was traveling from New York to Philadelphia one day and fell asleep en route. He was awakened by one of the porters who told him that his snoring had disturbed the other passengers. "Did you hear me snoring?" asked Nye. "Yes," said the porter. "Well, you must not believe all you hear," said Nye.

The Best Way to Pay a Salesman

D. O. Merchant presided in the absence of Mr. Knode, chairman of the division, and started the discussion by asking Mr. McMillen what was the best way to pay a salesman in order to stimulate business—salary, plus percentage of sales, or what? Mr. McMillen said that his firm paid salaries and if their salesmen exceeded expectations as to gross business and net profits they were given a bonus at the end of the year.

W. E. Perry asked if Mr. McMillen's salesmen were posted on costs of production and Mr. McMillen answered promptly in the affirmative—"absolutely," said he. The salesmen of the Union Bag & Paper Corporation were given a free hand as to pricing goods and if they sold too low they last their bonus.

R. S. Kellogg closed the discussion by instancing a case where the salesman of a paper mill was supplied with cost figures pertaining to manufacturing prices and also a sheet giving the prices at which the paper should be sold to provide a 10 per cent profit.

Before adjourning a standing vote of thanks was passed to President McMillen for his informing and entertaining address.

Three new buildings with a floor area of 15,000 square feet have been added to the plant of the Cameron Machine Company, of Brooklyn, N. Y., manufacturers of Cameron slitting and roll-winding machines, at a cost of over $100,000. This expansion is planned to take care of increased production, and also in anticipation of a steadily mounting volume of sales.

Frederick Kent Copeland, president of the Sullivan Machinery Company, Chicago, since 1892, passed away November 10 at Claremont, N. H. Mr. Copeland devoted the greater part of his business lifetime to the leadership of the company and its allied industries, and was widely known and respected in industrial circles.

A FOAMING *Niagara* Without Entrainment

ENTRAINMENT of valuable products is always a source of heavy loss to the manufacturer. The Swenson Forced Circulation Evaporator eliminates this loss from a practical stand point—even in evaporating foaming and viscous liquors which give the most trouble in the natural circulation evaporator.

This boiling liquor is discharged from the tubes at a high velocity against a parabolic deflector. The vapors are discharged through a curtain of liquor whose motion is rapidly downward. This prevents entrainment in the ordinary sense and beats down any foam that may be formed in the body. We have studied the entrainment problem in our semi-plant scale evaporator and in large commercial operating evaporators.

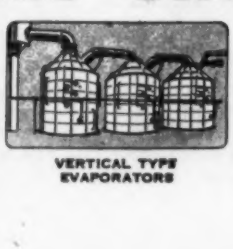
Send today for special Bulletin No. S-128 on Forced Circulation Evaporation.

SWENSON EVAPORATOR COMPANY

(Subsidiary of Whiting Corp.) 15669 Lathrop Ave., Harvey, Ill. (Chicago Suburb)

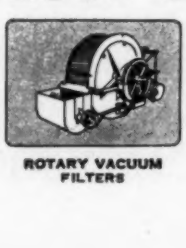
FORCED CIRCULATION EVAPORATOR

BASKET TYPE EVAPORATORS



VERTICAL TYPE EVAPORATORS

HORIZONTAL TUBE EVAPORATORS



ROTARY VACUUM FILTERS

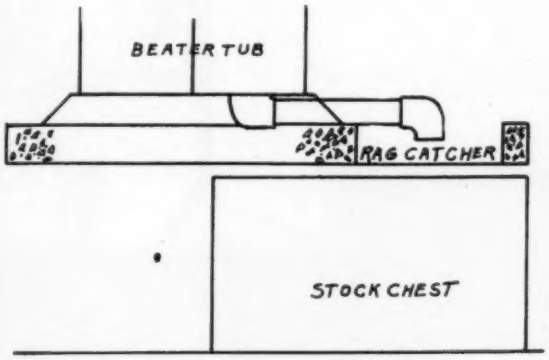
CONTINUOUS CRYSTALLIZERS

YARYAN EVAPORATORS

Practical Helps for the Mill Man

Rag Catcher Located in Floor

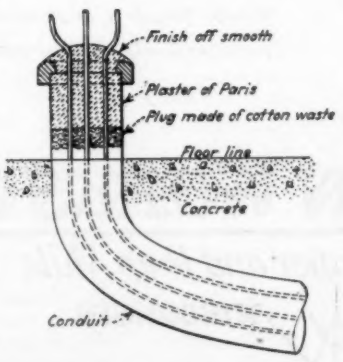
THE removal of strings, rags, and undesirable material from stock that had been prepared in the beaters for formation into paperboard, prior to passing the stock through the jordans has been given much consideration by one mill



that found it desirable to locate a sieve-like vat in the beater room floor in such a manner that all stock discharged from the beaters passes through the vat before entering the stock chest. The vat was made 8 to 12-inches deep and approximately 8 feet square. The bottom of the device was covered with one-mesh wire cloth. In dumping a beater, all stock is discharged into the vat where much of the undesirable material is retained by the wire mesh bottom, while the unrejected material flows through the wire mesh bottom of the vat into a stok chest. The rejected material is then raked from the wire cloth bottom as occasion demands.

Foreign Objects Kept Out of Conduits

IN THE August 1928 issue of Industrial Engineering was described a method of keeping foreign objects out of an electrical conduit. The method was described by Chas. A. Peterson and developed from an opportunity to remodel the electrical installation of a plant in which much of the equipment was old but in fair condition. A number of feeders were found to have been brought to the switchboard in conduit, the conduit having been placed in the concrete floor when the building was erected; but instead of using a type A or B condulet at the end of each conduit run, only a bushing had been used. The nature of the installation made it inadvisable to replace the bushings with condulets. It was decided to close up the tops of the conduits to keep out foreign substances. Ordinary cotton waste was rammed around the wires, about 10 inches below the bushing, making the wad of waste about 4 inches thick. The space above the wad of waste was then filled with Plaster of Paris with the plaster finished off as shown in the illustration. After the plaster had set, two coats of black insulating varnish were applied to the Plaster of Paris cap. Should it ever become necessary to withdraw the wires from the conduit, the plaster can be easily chipped away and the waste plug removed. In the meantime, however, the appearance of the electrical installation has been much improved and foreign objects are at the same time kept out of the conduits.

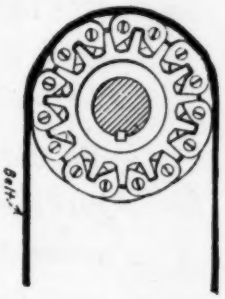


Simple Paste Pot

MACHINE operators in a plant manufacturing book paper were interested in a paste pot to hold the paste for splicing the breaks in the sheet at the dry end of the machine. A pot that would not break and one that could not be easily tipped over was desired. Therefore, a small copper measure and a copper saucer with a rim somewhat larger in diameter than the bottom diameter of the measure were obtained. The saucer was soldered to the measure bottom. This simple device cannot be easily tipped over, and is not easily broken. The saucer also acts as a drip catcher for the paste.

An Improvised Belt Drive

A METHOD of substituting a belt drive for a silent chain drive in case of emergency was described by G. I. Williamson in the October 2, 1928 issue of Power. A silent chain drive on an important machine was damaged, and no spare chain was in stock. The machine had to be kept in operation and some means of driving it had to be devised. The maintenance man suggested wrapping each sprocket of the drive with a piece of the chain taken from the undamaged section as shown in the illustration. This change was made quickly and the machine was back in operation in only a short time. Although the output of the machine was somewhat reduced through the use of the improvised drive, the drive was operated until a new chain was obtained.



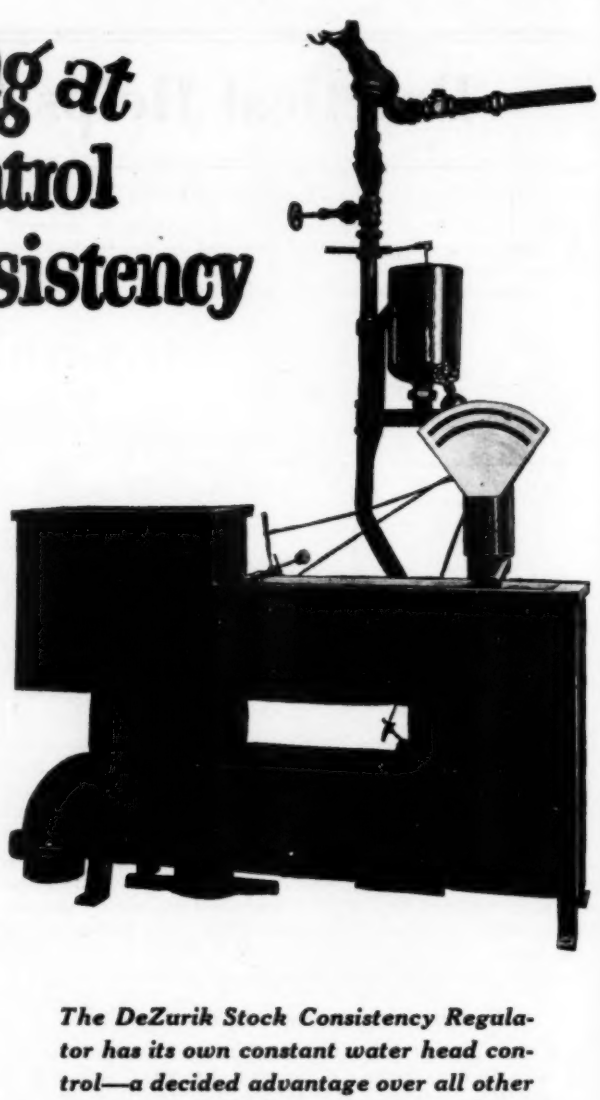
Joint Educational Committee Making Survey

Splendid results have been reported by the progressive pulp and paper mills throughout the country, which have been utilizing a program of vocational education to develop and increase the ability and efficiency of their workers.

This program has proved of such paramount value to the industry, that a special committee has been formed, which is fostered by and which has two representatives from each of the following organizations—The American Paper and Pulp Association, The Technical Association of the Pulp and Paper Industry and The American Pulp and Paper Mill Superintendents Association. This committee is known as the Joint Educational Committee and has for its purpose promotion of this program and the collection of the coordination of educational data and making suggestions and recommendations for the benefit of the average mill by this program.

This committee is now engaged in making a comprehensive survey of the educational work being done in the pulp and paper mills and in that connection a questionnaire is being sent to all mills in the country requesting information and suggestions. It is urged that all mills will return their questionnaires promptly to J. Norman Spawn, chairman Joint Educational Committee, P. O. Box 505, Canton, North Carolina.

As easy as looking at a gauge control your stock consistency



That's all the operation effort required to control stock density with the DeZurik Stock Consistency Regulator. It not only indicates the stock density, but automatically and instantly regulates it so that all stock is the weight required for a particular run. Water is added instantly if the stock being furnished is not the correct density.

The DeZurik Stock Consistency Regulator operates instantaneously—without power of any kind. The exclusive patented features of design and construction make possible this instant operation.

This is a stock consistency regulator that warrants your careful investigation now. Let us send you complete information.

The DeZurik Stock Consistency Regulator has its own constant water head control—a decided advantage over all other types of regulators. Varying water pressures in a mill make no difference in its operation.

—and the exclusive features of the DeZurik Stock Consistency Regulator are patented—U. S. Patent No. 1,669,412.

VALLEY IRON WORKS CO.

Machinery for Paper and Pulp Mills

APPLETON WISCONSIN

New York Office: 350 Madison Avenue
Western Manufacturing & Sales Division: Smith & Valley Iron Works Company
Portland, Oregon

The Month at Washington

WITH the opening gun of the second session of the 70th Congress, for a short session ending March 4th next, the legislative program will be taken up where it was abruptly left off through adjournment last May. Among the many bills up again for consideration we find S. 1266, a bill introduced by Senator Shortridge, and passed by the Senate Committee on Education and Labor, now on the Senate docket for action, which provides a federal agency for the collection and interpretation of statistics on industrial accidents. It is estimated that more than 2,500,000 industrial accidents occur each year, resulting in permanent injury to more than 100,000 persons, and costing industry $200,000,000 a year in payments to workmen or dependents. There is no federal agency now handling statistics along this line, which would be most valuable to industry.

Another bill on the Senate calendar is S. 4518, introduced by Senator Ransdell, to create an Institute of Health, to promote the health of human beings, improve their earning capacity, reduce their living expenses, to increase their happiness and prolong their lives, and seeking to prevent disease which incapacitates many workers.

The short session will be faced with the usual annual supply and appropriation bills, and much legislation which ought to be enacted will probably not pass. Some senators are, therefore, urging an extra session. With the Christmas recess breaking in, much constructive legislation will not even come up until after the New Year.

World Standards for Commodities—World trade cooperation, which is already taking expression through standardization, is making international commercial good will one of the keynotes of the modern merchandising era, says Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, and that the movement toward international cooperation in business is not only lessening business costs, but also reducing commercial friction and promoting a better international understanding.

Dr. Klein also points out that forecasts of international friction as a result of foreign trade competition are groundless and in conflict with modern commercial development, which is based on specialization and the elasticity of markets rather than on exploitation and commercial combat.

Standardization Urged—Simplified practice as a part of sound and progressive business management is urged on American producers, distributors and retailers as a policy to be ardently followed in the new year in a decisive effort to still further combat the mortality record of business failures, according to the Department of Commerce. Contrary to the belief that only manufacturers are interested in simplified practice, the department points out that a successful program is dependent upon the joint action of not only manufacturers and distributors, but also retailers and consumers.

Recent Tax Rulings—With a view to establishing a definite and lasting policy covering treatment of depreciation in calculation of federal taxes, the Bureau of Internal Revenue has authorized the initiation of depreciation studies on a nation-wide basis in co-operation with representatives of national trade associations and others concerned. As a result of these studies, it is hoped to evolve a table or yardstick with which to scientifically and accurately calculate all depreciation in various lines of business. For the present, the scope of the studies will be confined to physical assets alone, and patent rights, good will, leases or other tangible or intangible assets will not be considered as of a physical character. These studies will make for greater equity and equality in the collection of taxes under the various federal acts relating to taxation, and will greatly simplify the preparation of returns and their subsequent audit by the Internal Bureau.

The U. S. Court of Claims overruled a claim for exemption from tax on dues of a member in a manufacturers club, because its social activities were found to predominate over its activities in promotion of industry (No. E-450). The plaintiff sued to recover back taxes paid as dues on this membership in the Manufacturers' Club of Philadelphia, contending as a basis for the suit that the club was organized and conducted for its value to industry and commerce rather than as a social club, as set out in the club's charter and the state act under which it was organized. The Court of Claims found on examining the club's activities that the social side formed a material feature of its year-round operations and "that this could not be said to be only incidental to its activities in behalf of industry or commerce". The court, therefore, affirmed the action of the Internal Revenue Bureau in assessing and collecting the tax.

In Crown Willamette Paper Co., vs. Commissioner of Internal Revenue, the U. S. Board of Tax Appeals laid down a ruling as to when taxes "accrue" in the states of Oregon and Washington (Docket Nos. 11358 and 31010), holding that the taxes in each state "accrue" in the year in which they are assessed. "Thus a taxpayer who keeps his books on an accrual basis may deduct such taxes properly in computing net income in the year in which they accrue, notwithstanding that the taxes are not payable until the succeeding year", says the Board.

Recent Customs Decisions—Surface decorated paper, classified as embossed or printed at 4½ to 5c per pound and 17 or 15 per cent ad valorem under par. 1305, tariff act of 1922, was claimed not subject to the ad valorem rates of duty. The U. S. Customs Court found that the paper was made on a machine with attachments, not embossed or printed, and sustained the contention, holding the paper properly dutiable at only 4½ or 5c per pound under par. 1305. (No. 288315-G, Keller Dorian Paper Co.)

In another case, the merchandise imported was described as printed matter or surface-coated paper, and it was classified as manufactures of paper under par. 1315. The court held it properly dutiable under par. 1305. (No. 262857-G.)

In still another case, printed matter on surface-coated paper was classified at 35 per cent ad valorem under par. 1313 but claimed dutiable at 7½ cent per pound under par. 1306 as lithographic prints or at 25 per cent under par. 1310 as printed matter. The court found that it should have been classified at 5c per pound and 20 per cent ad valorem under par. 1305, and all other claims were overruled. (No. 254923.)

Paper board or cardboard, cut or shaped for boxes, but not susceptible for use as containers in that neither end is closed or capable of being closed without the addition of paste, glue or other means of fastening, was held properly classifiable under the provision in par. 1313 of the act of 1922, according to another decision by the U. S. Court of Customs Appeals (N. T. D. 43030).

The Commissioner of Customs has just issued Treasury Decision 43027 directing all collectors of customs to assess duty under par. 1304 of the tariff act of 1922 in bibulous handmade paper weighing less than 7 pounds per ream of 187,000 square inches.

Federal Trade Rulings—A second trade practice conference of the paper board industry was held by the Federal Trade Commission in New York City recently, to consider price discrimination, transfer of material from mill to fabricating department and sales below cost. Following this second conference all rules adopted by the industry will be considered by the Commission for approval.

The Federal Trade Commission has had on file a larger number of applications for complaint in the fiscal year begin-

Facts the Big Boss *Should Know*

No chemist should be criticized for his inability to analyze NITROSE. It can not be done. But he should not condemn it as "another coal tar product, too high in price."

There is no chemical test for NITROSE. Only an actual working demonstration will prove it to be *the LIQUID ARMOR that goes down through rust and welds itself into bare metal, forming a protective film that corrosion can not eat.*

NITROSE can be applied even under water; on oily surfaces; on hot plates without blistering or cracking—and with no more preparation than wire brushing the scale. Only one coat is needed. It costs less by spreading farther, saving labor, lasting longer.

"Just as good" is an alibi for "not so good." There is no substitute for NITROSE—the LIQUID ARMOR that spreads like paint.

Write for more facts the Big BOSS should know. We will gladly send a sample for demonstration test.

The NITROSE Company

1500E Peoria Life Bldg., Peoria, Ill.

ning July 1, 1928, than it has ever had in its history, with a total of 579 applications pending. The high mark was reached August 31st at 585.

Interstate Commerce Rulings—In Crown Willamette Paper Co. vs. Nelson & Albemarle Rwy. Co., No. 20114, the Interstate Commerce Commission has ruled that shipments of soapstone furnace linings, in carloads, from Schuyler, Va., to Camas, Wash., was overcharged for the portions of the movement from Esmont, Va., to Camas, Wash., and reparation awarded.

In R. P. Andrews Paper Co. vs. Long Island R. R., No. 19845, the commission found that classification ratings and class rates on paper cups, in carloads and less than carloads and reparation was awarded.

Recent Government Publications—Commerce Yearbook, 1928, Vol. II, has just been issued by the Bureau of Foreign and Domestic Commerce, giving valuable data about foreign markets, commerce and trade.

The U. S. now ranks first among the nations of the world as a compiler of statistics and the range of subjects is being constantly extended, with every important phase of business and social activities covered, according to the annual report of the Census Bureau, just issued, showing that nearly three million statistical items were published by the Bureau in the last fiscal year.

"Analyzing Retail Selling Time" is the title of Distribution Cost Studies No. 2, by the Domestic Commerce Division, just released, showing the various costs of selling various commodities over the retail counter.

"Organization and Activities of the Department of Commerce", edition of Nov. 1, 1928, is now available for free distribution at the Department.

The importance of government aid in the business progress of the United States, particularly in foreign and domestic trade promotion, is pointed out in the annual report of the Director of the Bureau of Foreign and Domestic Commerce, just published, showing the comprehensive character of the trade promotion activities of the department.

"The External Trade of New England", by R. J. McFall of the Domestic Commerce Division, is the title of Domestic Commerce Series No. 22, now available to interested parties showing a careful business analysis of the trade movement into and out of New England. This is the first of the kind ever collected or published. It gives an analysis by commodities, and the origin and destination of these commodities, with maps and figures.

"New England Manufactures in the Nation's Commerce", by Chas. E. Artman of the Domestic Commerce Division is the title of Trade Information Bulletin No. 582, just released, presenting for the fifth time accurate knowledge of the whole manufacturing situation in New England, and affording a bird's-eye-view of manufacturing activity in New England, the nature and importance of various types of manufacture, with a complete record of changes from 1849 to including 1925. Paper and Printing is shown as 9.9 per cent of the total, textiles ranking 27.2 and metal and related products 31.9 per cent.

Bureau of Standards Issues Annual Report—Many scientific accomplishments were achieved during the past year by the Bureau of Standards, according to the annual report of the Director, just made public, and revealing the outstanding position of the U. S. in the world of commerce and science. Among other experiments, wall board is now being manufactured from corn stalks. The Bureau issued 134 publications during the year. Close co-operation with large industrial groups has continued and the growing appreciation of the value of this joint research work is reflected by the number of research associates now stationed at the Bureau.

The resolution adopted by the International Committee on Weights and Measures, defining the international temperature scale, is set forth in a new Bureau of Standards paper (Research Paper No. 22), just released.

Biennial Census of Manufactures—The Census Bureau has just released its biennial census of manufactures takes in 1928 covering establishments engaged primarily in the manufacture of pulp goods in 1927, and which is available for distribution to interested parties.

Employment and Pay-Rolls—Employment increased 1 per cent in October while pay-roll totals increased 4 per cent. With 1923 as the basis of 100, the following changes are shown:

	Employment			Pay-roll totals		
	1927	1928		1927	1928	
	Oct.	Sept.	Oct.	Oct.	Sept.	Oct.
Paper and printing	104.2	102.1	103.5	113.7	112.5	115.1
Paper and pulp	93.3	90.5	90.5	99.5	96.2	99.2
Paper boxes	102.9	95.5	100.5	117.6	110.4	118.1

Postal Notes of Interest—A co-operative study of the U. S. postage stamp, to determine its adhering qualities and resistance to tearing, are now being made by the government departments interested, from the Bureau of Engraving and Printing which buys the paper and prints them through to the Post Office Department which distributes and sells them.

The Postmaster General has just issued a request for public co-operation to facilitate the delivery of business mail, and urging the use of return cards on all envelopes. Return cards not only promptly eliminate so-called undeliverable mail matter but also relieve both the sender and the postal service of much labor and expense. This will also help mailers correct their mailing lists. All third-class matter should also be a pledge in the return card guaranteeing payment of return postage. Attention is also called to the fact that postmasters are authorized to furnish mailers on Form 3547, for a postage charge of 2 cents, the new address of the addressee of undeliverable third and fourth class matter, if a forwarding order has been filled. The purpose of this provision is also to enable the sender to correct this mailing list.

Aviation—The U. S. definitely "took to the air" in the fiscal year 1927-28, with a record of outstanding accomplishments in all branches of aviation, according to the annual report of the Director of Aeronautics, Department of Commerce, just issued. Air-transport has now attained a definite place in the economic scheme of transportation.

Air mail service is now being supplied over 24 routes, with plans now under way to extend the service to South and Central America, according to a statement just issued by the Postmaster General, with air service now from Montreal, Canada, to Mexico City and Havana, Cuba.

About 140 companies are at present manufacturing airplanes in the United States, or more than those making automobiles.

Labor Legislation on Women—Laws that regulate women's work benefit working women and raise the standards of working conditions of their male fellow employees, according to a new bulletin just issued by the Women's Bureau, Department of Labor, entitled "The Effects of Labor Legislation on the Employment Opportunities of Women."

Wholesale Prices—A reaction from the recent upward trend of wholesale prices is shown for October according to statistics released by the Department of Labor, a decrease of 2 1-3 per cent over the preceding month. With 1926 as the basis of 100, the following changes are shown:

	October 1927	Sept. 1928	Oct. 1928	Purchasing power of 1926 dollar in Oct.
Paper and pulp.....	91.6	88.8	89.0	112.4

Air Mail Not a Hazard—Implications from a source indicating general propaganda, to the effect that the fire hazard in the transportation of mail by air constitutes a serious menace to the successful operation of the air mail, were recently challenged by the Postmaster General, who points out that statistics and facts in his office show that the hazard from fire to which airmail is subjected is no greater, if as great, than that attendant upon shipment of mail by rail or steamship.

Progress in Making Envelopes—Several definite physical properties must be found in paper used for making mailing envelopes and a great deal of skill is required in balancing these properties in the relation to each other, says the Bureau of Standards, where the paper section has devoted considerable time to the determination of the quality of envelopes. A complete copy of the report may be had on request.

Co-operative Forest Protection—Beginning with 11 states, federal co-operation in forest protection has now been ex-

Digesters - Incinerators - Barking Drums

All Manitowoc equipment is built for service. Only quality materials and accurate workmanship ever go into its construction.

Paulson Three Section Barking Drum

Manitowoc Riveted Sulphite Digester

Always get our quotations on this equipment!

Manitowoc Incinerator on car

In addition to Digesters, Incinerators and Barking Drums, Manitowoc Equipment includes Disc Evaporators, Blow Pipes, Causticizing and Dissolving Tanks, Diffuser Tanks, Relief Separators, Rosin Melters, Jacketed Kettles, Rotary Lime Kilns, Moore Speedcranes and Shovels, etc.

Complete information on Manitowoc Equipment will be sent upon request.

MANITOWOC ENGINEERING WORKS
Manitowoc, Wisconsin

MANITOWOC

tended to 38 states, says the Department of Agriculture. Fire losses in recent years have been materially decreased.

Employment Outlook Good—Winter outlook for employment is good, according to reports sent President Coolidge by Secretary Davis. These and other encouraging reports from the Department of Labor on the employment situation have convinced President Coolidge that seasonable unemployment the Department of Labor on the employment situation have

U. S. Products Laboratory—The ranks of the foreign scientists working on American wood-utilization at the Forest Products Laboratory were recently augmented, including H. B. Somerset of Melbourne, Australia, who will work as a member of the pulp and paper staff for one year before returning to Australia to take a position in a paper mill operating on eucalyptus.

Rules of Business Conduct—The rules of business conduct adopted by the waxed paper industry at a trade conference approved by the Federal Trade Commission will not become effective until Jan. 1, 1929, says the Commission, an extension of time having been requested by the American Waxed Paper Association. Fourteen rules were adopted at the conference, nine of which were affirmatively approved by the commission.

New Catalogues, Books and Publications

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.—A new bulletin describes Texrope Drive, which consists of a driving and a driven sheave, grooved for a multiplicity of Texrope belts of trapezoidal cross section. The power is transmitted by the wedging contact between these belts and the V shaped grooves. The booklet is well illustrated and among the various applications is an interesting page of illustrations showing a group of paper mill drives.

American Blower Co., Deroit, Mich.—This company's newest product, the "Sirocco" Unit Heater, designed to meet the problem of successfully heating the industrial plant, is described in an attractive new catalogue. Each part of the heater and the assembled unit are illustrated in color, and there are application diagrams showing different installations, also dimensions diagrams and pressure charts of all types.

Barrett, Haentjens & Co., Hazleton, Pa.—A new bulletin No. 850, just issued by this company describes a method used to make suction lift centrifugal pumps automatic, and while dealing with but one automatic pump system, is of rather general interest. The text is technical, yet can be understood by the average non-technical reader.

E. F. Houghton & Co., Philadelphia, Pa.—An interesting booklet, "Houghto-Clean" contains this company's recommendations for general and industrial cleaning, with the use of Houghto-Clean. There is a chapter giving directions for its use in paper mills; the washing of felts, sieve cloths, cleaning dandy rolls, fourdrinier wires and cylinder wires. A special booklet is issued giving details for metal cleaning which may be had upon request.

International Filter Co., Chicago—Crystalite is the subject of a 16 page illustrated technical booklet which discusses the early history and chemistry of zeolite water softening, the advantages of and the adaptability of Crystalite to upflow softening. International Crystalite water softener installations are shown.

Locke Regulator Co., Salem, Mass.—This company introduces its new line of regulators in catalogue No. 50. These regulators have a new improved variable compensating device which differs from that formerly used. The catalogue is well illustrated and is divided into seven parts—hydraulic regulators for controlling fuel and air supply to boiler furnaces; combination pressure regulators for controlling the flow of steam, air, gas, water or oil; balanced valves and self-contained automatic pressure reducing regulators; pump governors; tank and float valves; temperature regulators; and engine and turbine stop equipment. For special equipment and unusual installation problems, this company's engineers are prepared to design suitable apparatus which can be built to specifications.

Paper and Textile Machinery Co., Sandusky, Ohio—A new bulletin, No. 508, covers this company's line of tubing, casings, liners, cylinders, sleeves and rolls. One of the most important industries served by this company is the paper industry, and the bulletin illustrates some of the huge tubes used in the manufacture of paper.

BOOK REVIEWS

German Book on Paper Testing—From Verlag der Papier-Zeitung, Carl Hofmann G.m.b.H., Berlin, there has been received a paper-covered book entitled **Papierpruefungen**, by Robert Reimann, which bears the imprint of "Neue Deutsche Papier-Zeitung", Leipzig, the volume being apparently only distributed by Carl Hofmann Company. The volume, which consists of 166 pages of advertising and some 214 text pages, is printed on good paper and the typography is excellent, but no attempt appears to have been made to bind the pages firmly together, so that when the book is opened the pages become detached and fall out. It was perhaps the intention of the original publishers to leave the volume in this condition for special binding by the purchaser. However, it is not a work which will have much of an appeal to paper chemists as the particulars of tests and methods of determining the qualities of paper are not such as would be followed in a modern paper mill laboratory. It is perhaps intended for the use of paper dealers, printers, or others unfamiliar with scientific methods of testing. It is rather remarkable that not a single illustration of a chemical apparatus or a paper testing device appears anywhere throughout the book, except in the advertising pages. It is priced at Reichmarks 12.

The German Paper Market—The Papier Zeitung, Berlin, is distributing and has sent to us for review a book entitled **Organisation und Preisgestaltung auf dem deutschen Papiermarkt unter besonderer Berueecksichtigung der Gegenwart**, by Dr. Albrecht Huelbrock, which answers a great many questions concerning present day economic conditions in the German paper market. The book is more than a mere statistical account of market movements and price changes and has a distinct literary flavor, especially in the author's references to the historical basis of paper technology. It is a well documented work which should be of considerable value to students of the economics of paper and paper products.

Model Works in German Industry—The Feldmuehle Paper and Pulp Company, of Stettin, Germany, has favored THE PAPER INDUSTRY with a copy of one of the volumes in the series of **Musterbetriebe Deutscher Wirtschaft** (Model Works in German Industry), devoted to the paper industry, which gives an account of a model German paper mill just as the other volumes in the series describe model plants in electric works, the cigarette industry, newspapers and advertising and other departments of trade and industry in Germany, the object of publication being to make the people better acquainted with the position occupied by Germany in world economics. It is set forth by the publishers that the publication of articles on model American mills and factories have made these better known to the people of Germany than those of their own land.

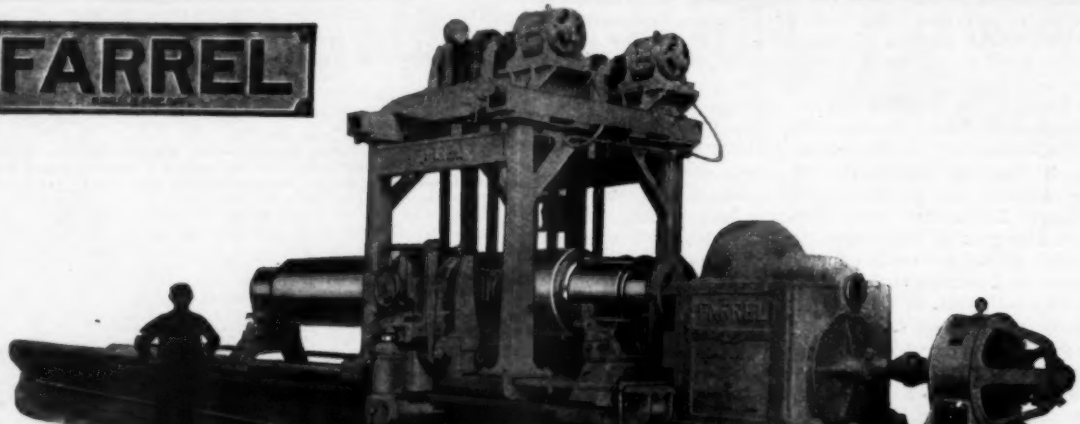
The present volume, which is No. 5 of the series, forms a small octavo of forty-eight pages bound in stiff paper covers describing the organization and development of the Feldmuehle Company. In addition to diagrammatic plans and illustrations of buildings and machinery it presents illustrations of early processes of papermaking in the far East. Thus views are given of the early Japanese methods of preparing barks for conversion into paper. These appear in connection with a concise historical narrative dealing with the manufacture and use of writing materials in ancient times.

The Feldmuehle Company was founded in 1885, and now operates three mills at Odermunde, Liebau and Hohenkrug, respectively. A diagrammatic plan of the mills at Odermunde gives statistics of the daily production of pulp and paper, as well as the consumption of coal, electricity, water and chemicals. On the reverse side of the leaf, another diagram shows by means of 10-ton railroad cars the amounts of products sold daily, as follows: cellulose, 75 tons; book paper, 45 tons; newsprint paper, 270 tons; greaseproof paper, 8 tons; writing paper, 50 tons; alcohol, 1,585 gallons; caustic soda, 2.6 tons. A paper machine installed at one of the mills of the company is rated the largest in Germany, being 6 meters or about 236 inches wide and intended to run at 984.24 ft. a minute. This is one of the most interesting and creditable accounts of a pulp and paper plant that has ever come under our observation. The publishers are Organisation Verlagsgesellschaft m.b.H. (S. Hirzel) Leipziger Strasse 115/116, Berlin W 8, Germany. The price is 2.50 marks.

Papermaking and Its Machinery—The second volume of Prof. Friedrich Mueller's **Die Papierfabrikation und deren Maschinen** has been received from the publishers, Guentter-Staib Verlag, Biberach-Riss, Wuerttemberg, Germany. This is a work of outstanding merit contained in a book of 466 pages of text, illustrated with 305 halftone plates and line drawings in addition to three large folded plans of newsprint paper and paper board machines and the layout of a paper machine room, respectively. With this volume, Professor Mueller completes a task on which he has been at work for a period of more than thirty years and for which he deserves great honor.

In the second volume, detailed descriptions are given of the construction and equipment of a paper mill, the various parts of a paper machine and their construction being described minutely and with extraordinary care. The author has evidently kept well abreast of American progress in the improvements of design and apparatus, there being frequent references throughout the work to American inventions. Credit is given to Prof. Harry E. Weston, of the School of Papermaking of the New York State College of Forestry at Syracuse, N. Y., for descriptions of drying systems, but more than one quotation is made from Professor Weston's book on "Pulp and Paper Mill Machinery", which it will be recalled was compiled in mimeograph form for the use of his students and has not yet been issued as a printed volume. In this way, there are included informing particulars of such recent inventions as the Minton Vacuum Dryer and numerous other apparatus and devices peculiar to the American paper industry, though the work is essentially a German treatise on paper machinery. The volume is divided into eight parts dealing respectively with the fourdrinier machine, the German press or machine for forming paper glazed on one side; the Yankee machine; the board machine; machines of special construction for the manufacture of specialties; saveralls and filters, kollergangs and defiberers; rewinders and cutters, calenders. Nothing apparently has been overlooked in this most comprehensive work. Part eight is an appendix replete with tables and curves of special reference value to paper mill chemists and engineers. Finally, there is a good index of both subjects and authors, without which any technical treatise is correspondingly the poorer. The price is the book is Reichmarks 36.

FARREL



FARREL 36″ NEW TYPE ROLL GRINDER

The SWING REST PRINCIPLE is an EXCLUSIVE FEATURE on the FARREL GRINDERS, providing for GREATER ACCURACY than can be obtained on grinders without this feature. These machines are built in 24″, 32″, 36″ and 42″ sizes. Electrically driven throughout.

FARREL-BIRMINGHAM COMPANY INC.,
ANSONIA, CONN.

Successor to: Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848. Birmingham Iron Foundry, Derby, Conn., Est. 1836.

THE JOHNSON FRICTION CLUTCH

Double Clutch with Pulleys

Single Clutch—Exterior

Single Clutch with Pulley

Single Clutch with Spur Gear on Hub

Various Views of JOHNSON Clutches

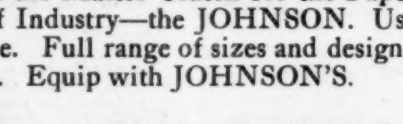
As Used In the Paper Industry

Here's the Master Clutch for the Paper Machines of Industry—the JOHNSON. Used nation-wide. Full range of sizes and designs. Get our data. Equip with JOHNSON'S.

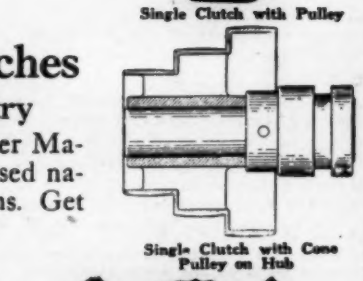
Write for Catalog P. I.

Single Clutch with Cone Pulley on Hub

Single Clutch Broken Away



Double Clutch—Exterior



Double Clutch Between Bevel Gears

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

NORTHERN NEW YORK NEWS

St. Regis Offers New Stock

Directors of the St. Regis Paper Company of New York and Watertown offered to common stockholders of the company of record at the close of business November 20, 1928, the right to subscribe to 150,000 shares of its authorized and unissued common stock at $75 a share, in the ratio of one share for each four shares held.

The action of the directors on the basis of market quotations for the stock is tantamount to cutting a melon for the stockholders of about $6,600,000. Figuring the rights as worth $11, the board expected to maintain the present dividend rate of $3 a share on the increased capitalization. St. Regis stock in the past few weeks has bounded from around 80 to more than 150 points on the New York curb market.

The rights to subscribe to the new stock will be evidenced by transferable subscription warrants, expiring at the close of business December 20, 1928, and shares of common stock subscribed for will be issued on or about December 21, 1928, but not prior thereto. F. L. Carlisle and Company, Inc. of New York, has agreed to underwrite any shares not subscribed for by stockholders.

The directors have authorized the use of the proceeds amounting to $11,250,000 for any of the following purposes: Retirement of St. Regis Paper Company six per cent debentures due 1931, of which $4,533,500 are outstanding; retirement of St. Regis Paper Company of Canada Ltd. 6½ per cent debentures, due 1929-1934, of which $1,200,000 are outstanding; acquisition of additional shares of Northeastern Power Corporation. St. Regis Paper Company at present owns 1,490,680 shares of Northeastern stock, giving it a controlling interest in the comstock at $21,297,635, an average price per share of only slightly more than $13, whereas at current market quotations these holdings have a value of nearly $70,000,000; on expansion of the manufacturing business and its subsidiaries.

Regular quarterly dividends of $1.75 a share on the outstanding preferred stock and of 75 cents a share on the outstanding capital stock, both payable Jan. 1, 1929, to stockholders of record Dec. 10, 1928 were also declared.

Utilities May Merge

Information has been given out that a gigantic merger of utilities in New York State is being considered. The property involved in this consolidation will aggregate approximately one billion dollars.

Among the interests said to be considering the proposed merger are the Mohawk Hudson Corp., which includes practically all the power systems between Syracuse and Albany; the Northeastern Power Corp., one of the Carlisle developments, with property in Oswego and other developments in Northern New York; the St. Regis Paper Co.; the Buffalo, Niagara & Eastern Power Co.; the United Gas Improvement Co., of Philadelphia, formerly owned by the Syracuse Lighting Company, and the Rochester Central Company.

If the merger is consummated, the one large holding company would control the distribution of electric power to practically all of the State of New York. It also would make the potential waterpower in the St. Lawrence River, over which there has been political battles for years, of much greater significance.

F. L. Carlisle and Company of New York City has agreed to give to St. Lawrence University at Canton, N. Y. $20,000 a year for five years to be used in any way the university may see fit in advancing the teaching of forestry.

The St. Regis Paper Co. of Watertown and New York is reported to have opened negotiations for the purchase of the Celulosa Cubana of Cuba. The Celulosa Cubana enterprise, for control of which financial arrangements are expected to be completed in the near future, is one of the new companies in the Island Republic which is utilizing the residue product from sugar cane grindings. The restrictions on Canadian wood pulp exports have imparted further stimulus to this new process for preparing paper from sugar cane.

The case of the United Paperboard Co. against the Iroquois Pulp and Paper Co., Thomson, N. Y., has after twenty years of litigation been decided in favor of the plaintiff. The property on which the United Paperboard Company's plant at Schuylerville, N. Y. stands, carries certain water rights, and the suit brought by this company was based on the Iroquois Company's infringement of these riparian rights. The question of damages is yet to be decided before a referee.

Forestry Notes

Assemblyman Clarence L. Fisher, member of the New York State Reforestation Committee announced that there are 19,052 acres of land in Jefferson County suitable for reforestation according to figures compiled from the questionnaire sent out recently to supervisors of Lewis and Jefferson Counties. Of the total area in Lewis County, 38,647 acres are suitable for reforestation. Lewis County has a total area of 812,000 acres and about one half of this acreage is in forest land which harbors an abundance of fish and game.

Oscar G. Agne, manager of the Jefferson County Farm Bureau has been elected president of the newly formed Jefferson County Forestry Council. The problem of the council is to develop 90,000 acres of waste land and the planting of 200,000 trees during the coming year. David A. Landon, representative of the Thousand Island Guest Association was elected vice president, and Clarence C. Smith, New York Development Association, secretary and treasurer.

Prefatory to the lobby to be conducted at the 1929 session of the New York State Legislature for a bill providing state aid for counties, cities, school districts and towns for reforestation purposes, a resolution by the Erie County Board of Supervisors advocating such legislation has been received by the Jefferson County Board of Supervisors. Erie County's solons take the position that the more interest the municipalities of the state stir up in the subject of reforestation through the establishment of material examples, the greater will be the benefit derived by the citizens of the state.

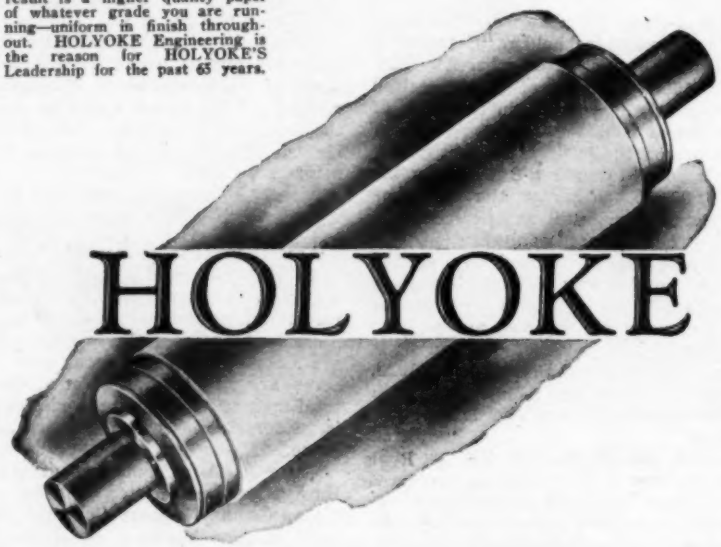
The William Randolph Hearst publications have renewed their contract with the Algonquin Paper Corporation insuring continuance of operations at the Algonquin plant at Ogdensburg, N. Y. The contract was signed during November between Frank A. Augsbury of the Algonquin company and representatives of W. R. Hearst. The Algonquin has been making newsprint for the Hearst press for some time. The new contract calls for a reduction in price due to the lower market value of newsprint.

Rumors going the rounds in Northern New York paper mill circles are to the effect that a new sulphite mill is to be erected at Ogdensburg, N. Y. in the near future. The Algonquin Paper Corp. of Ogdensburg operates a sulphite mill in connection with its paper mill, the plant having been erected two years ago. It has been reported that a paper mill might be built on a site of ground in Ogdensburg by outside interests. The ground is owned by F. A. Ausbury, president of the Algonquin Corp.

Leon Holliday, Carthage, N. Y., has been appointed assistant manager of the Carthage Division of the National Paper Products Co. Mr. Holliday has been a member of the company since 1924. The appointment was made during the month of November while J. D. Zellerbach, president of the company and M. L. Dinkelspiel, general manager of the Eastern Division were on a tour of inspection of the Carthage Division. E. B. Eddy, manager of the Carthage Division, who has spent the last six months between this division and

PIONEERS SINCE 1863 IN THE MANUFACTURE OF PAPER MILL AND WOOD PULP MACHINERY

HOLYOKE Cotton and Paper Rolls are precision rolls. Not theoretically so—but actually. The result is a higher quality paper of whatever grade you are running—uniform in finish throughout. HOLYOKE Engineering is the reason for HOLYOKE'S Leadership for the past 65 years.



LONGER LIFE

LONG LIFE in paper and cotton rolls designed and built by Holyoke Engineers is due to the hundred and one important details which they refuse to overlook. The Outstanding Holyoke-Roll qualities of Resiliency, Uniformity, Long Life, and Heat Resistance are all insured by this insistence upon attention to the finer points of engineering construction.

Write HOLYOKE MACHINE CO., HOLYOKE, MASS., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

the Pacific Coast will spend his time in the future, it is understood, between the Carthage Division and other plants owned and operated by the Crown-Zellerbach Corporation.

George A. Hennegan, Potsdam, N. Y. suffered the loss of his right hand November 16 when it became caught in a machine at the Unionville, N. Y. mills of the Racquette River Paper Company.

Clarence Yeardon, of West Carthage, N. Y., an employee of the St. Regis Paper Company at Deferiet, sustained the loss of two fingers on his right hand November 16 when they became caught in a revolving knife.

Damage amounting to $300 was caused by fire in the mill of the Champion Paper Company at Carthage, N. Y. November 1. The fire of undetermined origin was discovered in the stamp room of the mill. The greater part of the damage was caused by water used in extinguishing the blaze.

Frederick B. Losie, of Dexter, an employee of the Warren Parchment Company of Dexter, was struck by a shifting engine and instantly killed November 7th, while returning from the Dexter Sulphite Mill.

Steven Porter, Watertown, an employee of the St. Regis Paper Mill at Black River, has been awarded the bronze medal of The American Humane Association for saving the life of a dog last August in the Black River near the mill. Porter risked his life to save the animal which was being swept downstream and over a falls when it was pulled out.

National Paper Prods. May Change Product

The Carthage mill of the National Paper Products Company, Inc. contemplates changing the grade of paper manufactured at its Carthage plant, which will necessitate the expenditure of approximately $100,000 for alterations and different type of machinery.

The company is planning a survey of the market with a view to getting into a more profitable product than tissue and towels. If the change is made, alterations of plant and equipment will be started about the first of the year. The Carthage mill produces about 75,000 pounds of tissue and toweling per 24 hours.

This mill was originally built as a tissue mill and was owned for many years by W. O. Ball, Drullar Ball and Rae Ball of Watertown. They disposed of the property to the National Paper Products Co., which made extensive additions, went into a different grade of tissue and added a plant for making the paper up into products for the market.

Odessa Gauthier, 30, of Castelton, Ont. Canada, was killed November 10 on the Lyons lumbering job at Bay Pond, N. Y. when he was struck by a rolling log.

NEW YORK CITY NEWS

I. P. Company Is Reorganized

The International Paper and Power Company has been organized as a Massachusetts voluntary association. A declaration of trust dated November 1 has been filed with the Massachusetts Commissioner of Corporations, setting forth the agreement for reorganization of the International Paper Company.

A substantial amount of stock of the International Paper Company has been deposited under the reorganization plan and will be exchanged for stock of the International Paper and Power Company. The latter, which will receive a large proportion of the stock of the New England Power Association from the International Paper Company, has an option to buy, for cash, additional shares of the Association which will bring its holdings to 21 per cent of the voting issue. Upon completion of this acquisition, which it is expected will be financed through an issue of debentures or Class C common stock of the International Paper and Power Company, the new holding company will be predominantly a public utility company, despite its leading position in the paper, pulp and lumber field.

Annual Oakite Conference

The technical staff, field serice men and executives of Oakite Products, Inc., met in the general offices in New York, November 14 to November 17, on the occasion of their annual sales conference.

District managers and representatives from thirty-three States and Canada came together in daily discussion, subjects of which ranged from the cleaning of watch crystals to ocean liners and silk stockings to 80,000-barrel oil storage tanks. There were nineteen papers on technical, sales and service topics followed by brisk, informal discussion and interchange of experiences.

On the third day of meeting W. H. Bruce, publisher of **School Board Journal**, and Frank O. Dunning, eastern manager, addressed the conference on the importance of cleanliness and sanitation in schools and institutions; W. E. Irish, associate editor of **American Machinist**, gave an address on cleaning operations in the machine tool and accessory field; P. W. Swain, managing editor of **Power**, spoke of the need for further developing cleaning methods in the power plant field.

A number of interesting papers were presented dealing with the use of oakite in various industries. These included "Oakite Developments in the Wire Industry," and "Operations with Oakite Materials in Printing, Lithographing and Electrotyping Plants."

Maurice O'Meara

Maurice O'Meara, for many years a prominent figure in the paper jobbing and exporting trade in New York and formerly head of the old firm of Maurice O'Meara Co., died on November 4 at his home in the Barclay Hotel, New York, after an illness of several months at the age of 57 years. The funeral was held on election day and was attended by a large gathering of the deceased's friends in the paper trade of the metropolitan district.

After the breaking up of the firm of Maurice O'Meara Co. a few years ago, Mr. O'Meara went with Wilkinson Bros. & Company, paper dealers of 419 Broome street, New York. A widow, a son, a daughter and two brothers survive him.

A petition in bankruptcy was filed on November 15 against Fortgang Bros., jobbers of paper at 1607 Park Ave., New York, by the Alfred Bleyer Co., creditor for $1,400; Trinity Bag and Paper Company, Inc., $300, and the Forbes Paper Company, Inc., $700, and later Charles Shongood was appointed custodian by Judge Goddard.

The R. T. Vanderbilt Co., Inc., 52 East Forty-second St., New York, dealer in papermakers' clay, has filed notice of an increase in capital from $250,000 to $1,000,000.

The State Paper Bag Corp., of New York City, was incorporated a few days ago under New York State laws with a capital of $100,000 of preferred stock and 500 shares of no par common stock to manufacture and deal in paper bags and other paper products.

The Jefferson Paper Co., Inc., is the title of a new corporation in New York City recently incorporated under New York State laws with a capital of $3,000 to deal in paper. The new corporation is represented by J. B. Barshay, of 2 Lafayette St., New York.

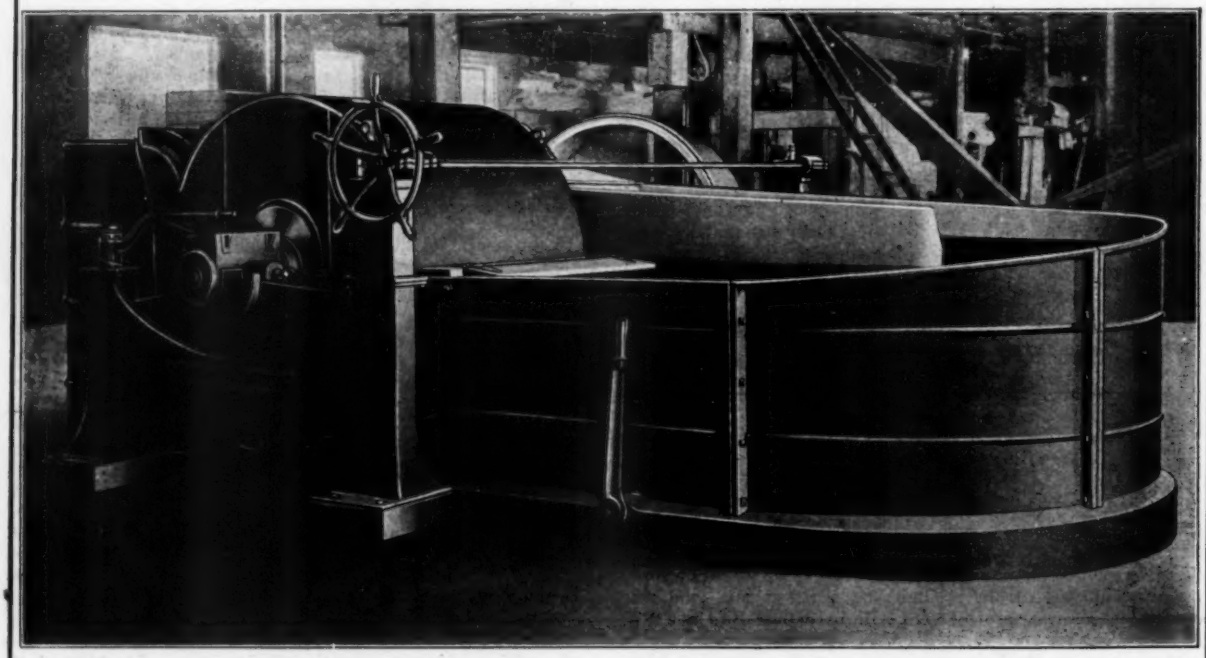
The firm of Henry Lindenmyer & Sons, among the oldest and best known paper jobbing concerns in New York City, has moved to its new quarters at 480 Canal street, at the intersection of Canal and Hudson streets, in the new Holland Tunnel district of New York.

"Your Paper is Made in your Beaters"

NEW TYPE

HIGH DENSITY

BETTER CIRCULATING



THE PROBLEM is "how to beat *more* stock into *better* quality with *less* cost for labor and power."

THE ANSWER is "the Dilts New Type, High Density, Better Circulating Beater, built with high tub and with the roll located toward the rear end."

We can rebuild your beaters to our New TYPE design.

Dilts
MACHINE WORKS, Inc. FULTON, N.Y.
EXPORT OFFICE 115 PARK ROW NEW YORK CITY

Some 1928 orders
Ohio Boxboard Co. 8
Int. Paper Co. (Mobile Paper Mills) 15
Gulf States Paper Corp. . 6
Oswego Falls Corp. 4
St. Regis Paper Co. 8
Consolidated Paper Co. . 6
E. B. Eddy Co. 6
And many others.

"Your Paper is Made in your Beaters"

WISCONSIN NEWS

Paper Mills Show Progress in Safety

Safety activity among Wisconsin in paper mills continues to bring gratifying success. This is especially true of the Kimberly-Clark Corporation's mill at Kimberly, Wis., where the work was set at naught a year ago by a disaster. This seems to have served as a spur to greater effort, because the mill came through on Nov. 1st with a perfect record for 310 days in the plant department.

About 100 employees were included in the group which recorded 31,000 "man days" of safety. Part of these belonged to the yard crew, the workers who are exposed to accidents more perhaps than any other. Each of the employees received a check for $5 as their reward.

Mills of the Consolidated Water Power and Paper Company also are out to make some new records. The plant at Biron, Wis., is meeting with the best success, having gone three months without a lost time accident. Next in rank come the mills at Stevens Point, Appleton and Ashland, Wis., where the record has been perfect for two months. At the main mill at Wisconsin Rapids, Wis., the company has not been as fortunate because of accidents in connection with the extensive construction work now in progress. The number of employees in the four safe mills above is about 1,000.

Another recent record of the Kimberly-Clark Corporation is that achieved by its mill at Niagara, Wis. Here employees of the groundwood and maintenance divisions were given checks of $5 for the fifth time for having completed 100 years of safety per man, based on the "man day" computation. Considerable commendation has been forthcoming on this feat because these departments are more hazardous than many which have done less in safety.

Annual safety schools again will be held in cities of the Fox River Valley, according to plans made recently by the Fox River Valley Safety Council. Evening sessions for foremen, executives and employees in general will be held in various cities beginning in January and continuing through March. Speakers will be engaged for each session to present all phases of industrial safety. The final session in each city will be a banquet. Organization work is in charge of Harry F. Menzel, who formerly was with the Wisconsin Industrial Commission.

Team work for both safety and happiness were recommended in an address by F. A. Lauerman at one of the recent sessions of the safety school at Menasha, Wis. Mr. Lauerman is with the Interstate Iron and Steel Company, of Chicago. He said paper mills on the Fox River Valley are on the right track when they engage in constant activity to keep up safety interest and enthusiasm. This eternal interest is the secret of success, he declared. Foremen were told to look out for the things that seemed trivial but are still important to safety. Scratches, slight wounds, minor repairs in the plant and such things often lead to troubles. Mr. Lauerman urged kindness to the new worker, a smile and a pat on the shoulder, because such acts make a man sympathetic to the program the company is trying to bring about.

Tariff News

Attempts to change freight rates to the disadvantage of Wisconsin paper mills are meeting with strenuous opposition on the part of mills thus affected. One petition filed by mills of the Fox River Valley asked the Interstate Commerce Commission to suspend rates which were to become effective Dec. 1, 1928, on mixed carloads from Pacific coast mills to the west and southwest. The rates were shown to be discriminatory to Wisconsin mills in the shipment of mixed carloads of toilet paper, paper towels, paper napkins and wrapping paper. There were fears that the advantages gained by the western mills would force those in Wisconsin out of the markets in some of their best trading territory.

Coast mills were to be granted a rate of $1.25 per 100 pounds to Houston, Tex., a distance of 2,694 miles, while Wisconsin mills were obliged to pay 98.5 cents to the same market for a haul of 1,251 miles. This situation was held to be highly discriminatory. It is feared that past history will be repeated, because a flourishing wrapper paper business among Wisconsin mills was abandoned and other products put in its place. Decided inequalities in rates was termed the sole cause.

A victory has been won by Wisconsin mills through a decision made recently by the Interstate Commerce Commission. Western Trunk Line railroads were prohibited from filing blanket tariff supplements on a wide range of products, one of them pulpwood. The roads contended that increases were necessary to take care of heavier operating costs, and wanted higher rates published. No change will be made for the time being, the commission has ruled.

Another pulpwood case decided by the commission prevents a reduction of freight rates at the request of the Tomahawk Pulp and Paper Company, of Tomahawk, Wis. It was contended that the rates were too high on shipments coming in from Canada and Minnesota by way of Superior, Wis. The commission declares that the rates are not unreasonable.

To Ask Appropriation for Forestry Program

An appropriation of $2,082,085.28 for conservation work in Wisconsin will be requested of the State Legislature when it convenes in January by the Wisconsin Conservation Commission. These funds are asked in support of the most extensive program ever attempted. A budget of $345,500 has been proposed solely for forestry activities over a two-year period. Reforestation and fire prevention will comprise the main expenditures.

Through a revision of Wisconsin laws, especially with regard to taxation of standing timber, the lumber and paper mill interests have been encouraged to go into tree growing and selective cutting on a large scale. These activities will increase as time goes on, mainly to guarantee the future of the paper industry and overcome the insecurity of the timber slashing of the past. The conservation commission as now organized is engaged in a practical program that the mills are glad to support.

Under the reforestation plan, the State enters into partnership with private owners, each agreeing to pay a tax of ten cents an acre on lands set aside for tree growing. The agreement covers a period of fifty years at the close of which time the State receives ten per cent of the stumpage value. The State and the land owner share jointly the expenses of the project.

When the conservation commission met recently at Wisconsin Rapids, a campaign was mapped out to stop the slashing of small pines, a practice which has been widespread in the past. A force of conservation wardens will guard the lands and arrest offenders. The commission inspected the 3,000-acre reforestation project of the Nekoosa-Edwards Paper Co., and commended by resolution the pioneering effort in this direction.

Wisconsin's timber cut this winter in Sawyer County and vicinity will be 100,000,000 feet of hemlock and hardwood. Lumber companies are putting 5,000 men at work. Pulpwood crews will follow the lumbering gangs to get out logs for the mills, although the Wisconsin cut will not be a large one this year.

Cost Association Has Interesting Session

Systems which are used to advantage in industry were discussed by the Wisconsin division of the Cost Association of the Paper Industry at its quarterly meeting held last month at Menasha, Wis. It was said by L. F. Larkin that a bonus system is advisable and practical. He is connected with the Milwaukee Electric Railway and Light Co., of Milwaukee, Wis., where the plan has been tried. More work was accomplished with less workers after the bonus was applied, he said. The number of employees was actually reduced when the workers became more efficient.

"Standard Costs and Budgeting" was the subject taken up by H. J. Bock, of Stevenson-Harrison & Jordan, cost accountants, Chicago. No budget should be made until production, raw material supply, equipment and other factors of

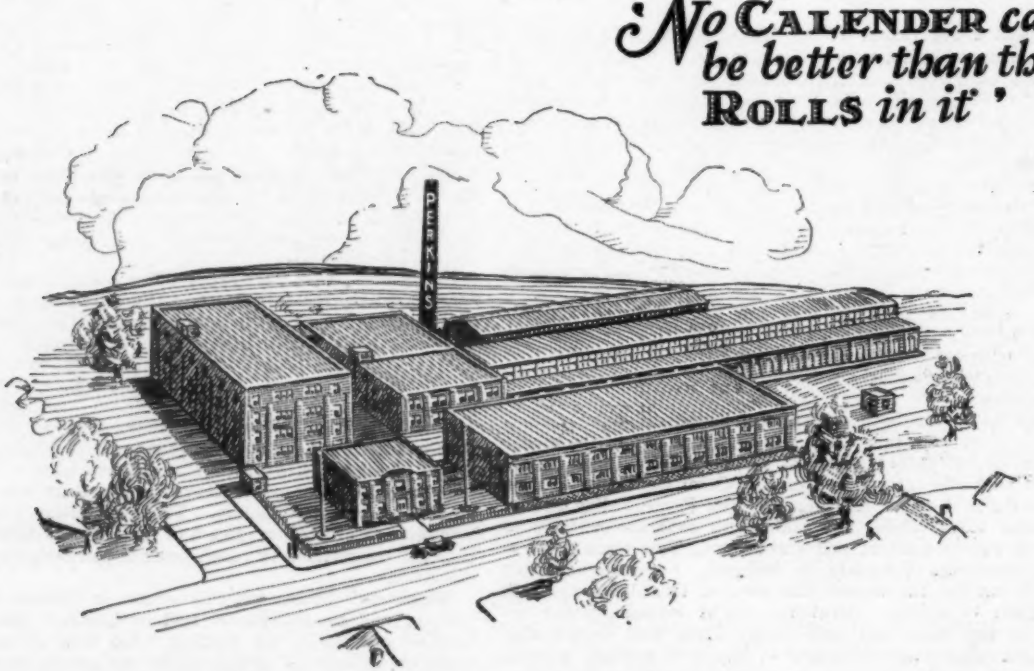
PERKINS HOLYOKE

SUPER - CALENDERS

Close association with the paper industry for more than half a century has resulted in the development of Perkins Calenders made to finish paper in the most satisfactory way it can be done.

There is built into every Perkins Calender the extreme ruggedness necessary for modern operating speeds and conditions. Engineering and construction have been accomplished for high efficiency in production, ease of operation, low power consumption and minimum upkeep.

'No Calender can be better than the Rolls in it'



B. F. Perkins & Son, Inc., Holyoke, Mass.

COTTON ROLLS
PAPER ROLLS
EMBOSSING ROLLS
CHILLED IRON ROLLS
GRANITE PRESS ROLLS
WEB SUPERCALENDERS
GLASSINE SUPERCALENDERS
FRICTION CALENDERS

TRADE MARK REG. U.S. PAT. OFF.

EMBOSSING CALENDERS
SHEET CALENDERS
PLATERS
MULLEN PAPER TESTERS
TENSILE TESTERS
VENTILATING FANS
RAG CUTTERS
STOCK CUTTERS
PAPER DAMPENERS
BLEACH EJECTORS

investment and manufacture have been analyzed. Then a budget can be made that is not hit or miss, or the product of guess work. It will be on a basis where it can be mandatory and not an estimate.

R. D. Barron, of the Marathon Paper Mills Co., Rothschild, Wis., presided at the sessions, as he is president of the division. I. M. Carney, of the Tomahawk Kraft Paper Co., Tomahawk, Wis., is secretary. A dinner was held following the business sessions.

Wisconsin Carton Co. Elects Officers

B. C. Koepke, a prominent contractor of Appleton, Wis., was elected president of the newly organized Wisconsin Carton Company, of Neenah, Wis., at the organization meeting of the board of directors recently. Henry Fellenz, of Theresa, Wis., is the vice president, and J. T. Mader, of Appleton, Wis., is secretary-treasurer.

Plans will be prepared at once for a building to be erected on a 17-acre site at Neenah. The company is capitalized at $200,000.

Jobbers Visit Mill Via Nepco Plane

Airplane parties are the latest innovation in sales promotion by the Nekoosa-Edwards Paper Company, of Port Edwards, Wis. Using the new tri-motored Ford monoplane purchased recently for company use, the pilot has escorted groups of a dozen from Chicago to the airport at Wisconsin Rapids. These parties consist of jobbers and salesmen of the company located in the Chicago territory.

Leaving Chicago at 9 o'clock in the morning, the travelers covered the 215-mile journey in about two hours. They were met by automobiles and taken on a tour of the mills at Nekoosa and Port Edwards, then served with a dinner and also given a glimpse of Nepco lake and the forest nursery maintained by the company. The plane conveyed them back to Chicago so they were home by 5 o'clock in the afternoon, the entire trip thus consuming only the average time of one working day.

The purpose was to acquaint the sales representatives more closely with the products they are selling, and to know something about the processes of manufacture.

In a recent survey made at Green Bay, Wis., it is found that the investment in paper mills there is $14,000,000. The mills pay the city property taxes annually amounting to $100,000. These facts were revealed in an address made before a luncheon club by Lee Jonte, of the engineering department of the Hoberg Paper and Fibre Company, Green Bay.

About 325 men have been enrolled to date in the training classes for paper mill foremen which will be held one evening a week starting in January in various cities of the Fox River Valley. The work is conducted in co-operation with vocational schools under direction of H. G. Noyes, state paper mill education director. Classes are held in many instances right at each paper mill. A series of this kind was conducted during the fall among paper mills of the Wisconsin River Valley, with an enrollment of 243 men.

Australian Chemist to Study at Forest Products

Australia is interested in learning the latest developments in the chemistry of pulp and paper and is obtaining this information through the U. S. Forest Products Laboratory, Madison, Wis. H. B. Somerset, of Melbourne, has arrived in Madison to spend a year as a member of the pulp and paper staff of the laboratory. During the time he expects to learn much that will be of value to his country industrially. The laboratory has men from several foreign countries on its staff at the present time, all of whom are seeking enlightenment on the chemistry of wood.

The Wisconsin division of the American Chemical Society held its fall meeting at the laboratory recently. Members heard an address by Dr. George R. Ritter a staff member. He showed how wood pulp is developed chemically and its relation to the paper industry. Beating processes were explained and a plan outlined to study the complex of wood structures by X-ray.

Ernest Mahler, vice president in charge of manufacturing for the Kimberly-Clark Corporation, Neenah, Wis., has been elected a trustee of Lawrence college, Appleton, Wis. He succeeds J. A. Kimberly, deceased, who was the late president of the corporation. Mr. Mahler's intense interest in higher education, and in education and engineering especially, led to his choice.

Announcement is made of the death recently of Hadley V. Gerry, of Appleton, Wis. He formerly was superintendent of the sulphite mill of the Riverside Fibre and Paper Company of Appleton.

Improvements in Mills Nearing Completion

The arrival of the new year will see the major portion of the construction work and improvements on Wisconsin mills completed. Crews have been running a race with cold weather so as to enclose new plant units, especially in the case of the Consolidated Water Power and Paper Company. Its new digester plant at the Interlake plant at Appleton is entirely enclosed and only the installation of equipment remains. The new finishing room of the main mill at Wisconsin Rapids is ready for the roof. Walls of the new bleach plant at Wisconsin Rapids also are about completed.

Construction of a new concrete smokestack at the John Strange Paper Company, Menasha, Wis., also is completed The stack is 220 feet high and represents a part of the improvements which are being made to the power plant and boiler room.

Installation of the nine digesters at the new plant of the Consolidated company at Appleton is progressing with satisfaction. Five of the steel shells have been finished and are being lined with acid resisting brick by a crew of masons. The other four are taking shape rapidly and much of the piping and other equipment also is in place.

It has been necessary to renew the barking drums of the Consolidated mill at Biron. Steel workers are replacing them one by one since it is possible to shut down only one at a time. Other improvements consist of rebuilding a part of the smokestack, pointing the brick and adding lightning rods. The hot pond at the Consolidated mill has been enlarged and a new slasher saw has been installed.

The Consolidated also has installed new Harland motors on machine No. 2 of its mill at Port Arthur, Ont. This work was contemplated last spring but the motors were lost with the foundering of the steamer Kamloops. Temporary installation was necessary until new motors could be delivered.

The Atlas mill of the Kimberly-Clark Corporation at Appleton has been undergoing repairs to the building. The beater room was given a new tile roof and other parts of the mill have been put in first class condition. The work was done by C. R. Meyer & Sons Company.

E. A. Meyer Purchases Peshtigo Paper Co.

Reorganization of the Peshtigo Paper Company, Peshtigo, Wis., to be known after January 1st as the E. A. Meyer Paper Co., is contained in an announcement emanating from E. A. Meyer, Menasha.

Mr. Meyer has resigned as general manager of the Menasha Products Co., more familiarly known as the Manasha Printing and Carton Co. He says he has purchased the Peshtigo Paper Company and will change its name as stated above.

The Peshtigo Paper Co. is a wartime development with capitalists interested from Green Bay, Menasha and Appleton, Wis. The company has a sulphite mill and a two-machine paper mill, and in the deal now pending there is involved approximately one million dollars.

During the post war depression, the corporation was thrown into a receivership, and was put back into profitable operation under the management of P. M. Allen, of Detroit, Mich. Several attempts were made to dispose of the

C-H 60" Magnetic Clutch on beater drive —Frank Smith Paper Co., Middleton, Ohio.

Just two members—no levers, toggles, or links to require attention.

Perfecting the beater drive...

Heavy starting torque—jerking strains on equipment—these and all other starting problems on the beater drive are eliminated by the use of C-H Magnetic Clutches.

"Power-factor-boosting" motors can be used . . . profit-saving economies realized . . . regardless of starting torque with these smoothest, simplest, most convenient clutches.

The motor is started without load, attaining full speed and power. At the touch of a button, located anywhere, the C-H Clutches pick up the load—smoothly, without grab or jar.

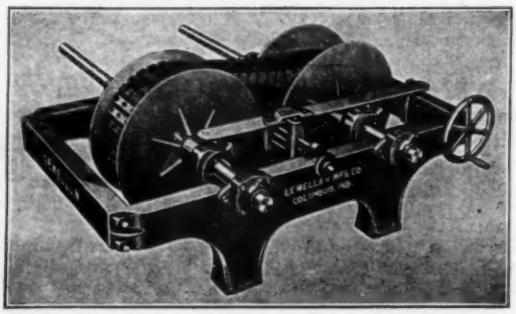
On other paper mill drives, too, C-H Magne ic Clutches provide like advantages — all fully explained in the special paper mill booklet No. P-27. Write for it today.

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1273 St. Paul Avenue
MILWAUKEE, WISCONSIN

CUTLER HAMMER

Magnetic Clutches Save Time and Save Equipment
(3235)

LEWELLEN Variable Speed **TRANSMISSION**



There is a reason for the enthusiastic boosters of LEWELLEN variable speed transmissions. These owners know the LEWELLEN has made good on their jobs, in many instances after other types and makes of variable speed control had failed.

No matter what the nature of the installation, no matter how difficult the job assigned to it, the LEWELLEN transmission justifies every claim made for it, with a margin of good measure which makes every user, not only satisfied but enthusiastic.

You have to own a LEWELLEN, to appreciate the difference in variable speed transmissions. We invite you to submit your speed control problem to us, and let our engineers show you, by means of detail blueprint, the logical solution to your problem. We shall be glad to do this without any cost to you, and it will not obligate you in any way. Bulletin No. 276 is just now off the press. We have a copy for you, if you will write us.

Nine LEWELLEN variable speed transmissions, mounted upon the ceiling in this one department of a large Indiana Manufacturing plant. Precise control of speeds cuts production cost.

Lewellen Manufacturing Company
COLUMBUS, INDIANA

plant under a receivership auction, but no offers of a substantial size were made so the matter of final disposition has been pending for several years.

No announcement has been made as to the identity of the men who will associate themselves with Mr. Meyer in this enterprise. A meeting of bondholders is to be held soon, and other legal phases of the situation cleared up before the final transfer takes place.

MICHIGAN NEWS

Mill Executives to Discuss Waste Disposal

The executive committee representing the paper manufacturers of Michigan is to meet in Lansing sometime during the month of December, according to information from the state conservation department.

This meeting is called for reorganization and to make a more active study of efficient mill waste disposal. This committee has completed a general study of the problem. However, it now seems necessary to subdivide the committee for detail study of individual problems. Felix Pagenstetcher, president of the Bryant Paper Company, is a member of the committee.

Pictures of the Kalamazoo Vegetable Parchment Co.'s model paper mill, parchment community, and how parchment paper is made, was shown in two reels of motion pictures at the November 8th meeting of the Advertising Club of Kalamazoo.

Joseph Thomas Stratton, an employee of the Bryant Paper Company, died at his home November 9th. He was born in England, and was 64 years of age.

The Paper Technologists Club held its November meeting at the office of the Bryant Paper Company November 14th. Ivar Lundbeck of the Lee Paper Company, Vicksburg, presided. Elbert Milham of the technical department of the Bryant Paper Company, outlined the more important chemical tests made on raw materials in paper making. Frank Whittington, of the Sutherland Paper Company, supplemented Mr. Milham's remarks with a paper.

John Stuller, an employee of the Bryant Paper Company, sustained injuries November 8th while he was unloading a bale of paper from a freight car. He slipped and fell between the loading dock and car, the bale of paper rolling on top of him.

The Michigan Division of the American Pulp and Paper Mill Superintendents' Association held its regular monthly meeting November 15th at the Park American Hotel. The meeting was preceded by a dinner, after which Elbert G. Milham, of the Bryant Paper Company, gave a very interesting talk. The meeting was well attended.

OHIO NEWS

H. L. Dibble, former superintendent of the Gardner & Harvey Paper Co., has resumed connections with the firm as plant manager succeeding W. A. Mockler. Mr. Dibble was connected with a Kalamazoo, Mich., paper company after leaving Middletown three years ago.

Nashua Gummed Coated Paper Co. is now operating two new machines for a more efficient and expeditious output of its famous products. Both machines have been installed within the past month. One is a 96 inch waxing machine, manufactured by the Shartle & Bevis Machine Co., and the other is a Meisel four-color Rotary printing press, which operates in two independent sections, each capable of printing two colors simultaneously.

Minor Beckett, president of the Beckett Paper Co., of Hamilton, is suffering an injury to his spine, caused by a fall from the third story of his home Monday, December 3. Mr. Beckett had been receiving treatments for headaches for several days. Before retiring he had taken toys to the third floor to put them away for Christmas, when he suddenly became dizzy, stumbled to a window for fresh air and fell through the window to the lawn below. The full extent of his injuries has not been determined.

Theodore D. Griley

Theodore D. Griley, a director of the Gardner-Harvey Container Co., Middletown, Ohio, also the Meade Pulp & Paper Co., Dayton, Ohio, died at his home in Baltimore, Ohio, November 23, at the age of 43 years. Until recently, Mr. Griley was general manager of the Fairfield Paper Co., Baltimore, Ohio, of which he was one of the founders. He was well-known in paper and pulp circles and was a member of various Masonic bodies, including Alladin Temple of Shriners.

The deceased is survived by his widow, a son, and several brothers and sisters.

Goodrich Belt in Gigantic Undertaking

Dumping a small mountain, from the heart of the business region in Seattle, Wash., into Puget Sound by means of 10,000 feet of conveyor belt, is pronounced by engineers as one of the most spectacular engineering feats ever attempted in a large American city. Details of this unusual transfer of earth from land to water, have been given out by the B. F. Goodrich Rubber Co. This company is supplying a total of 63,000 pounds of belt for this gigantic undertaking. The main conveyor belt is 10,000 feet long and weighs 13 and a half tons.

Five portable conveyors are to be placed at different positions on the site as feeders to the main conveyor which is one and three quarters inches thick and three feet wide. More than 5,000,000 cubic yards of earth will be moved. It is estimated that 21 months of 24-hour working days will be required to complete the job. The cost of the project is announced at $2,250,000.

Steel scows will receive the earth at the shore line in Puget Sound and carry it out about 1,500 feet where it will be dumped. This novel means of shifting a mountain presents a novel feature in the heart of a busy city in that it will not halt traffic or business activity in any way.

M. P. Bhargara, of the Forest Research Institute, Dehra Dun, India, recently sailed for England after spending some time in Canada and the United States. The purpose of his visit was to acquaint himself with the practice of pulp and paper making employed on this continent, with a view to applying it with modifications to the manufacture of pulp and paper from Bamboo in India. Mr. Bhargara believes that unusual developments in India in the next few years will be witnessed in this particular line.

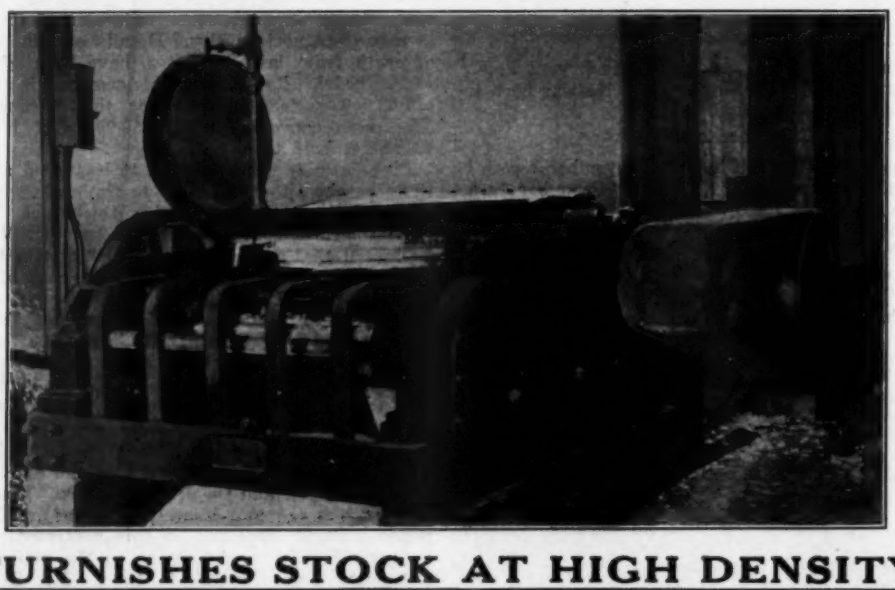
Kozo Suehiro, an engineer for the Oji Paper Co., of Tokyo, who is travelling about the world on a tour of inspection of sulphite mills, has been spending some time visiting mills in Canada and the United States. While in Watertown, N. Y., he visited the plant of the Bagley and Sewall Co., which has supplied the Oji Paper Co. with ten paper machines, six of which are installed in the mill with which Mr. Suehiro is connected.

Anders Hellstrom, president and general manager of A/B Papyrus, of Molndal, near Gothenburg, the largest fine paper mill in Sweden, has been visiting Canadian pulp and paper mills recently.

Mrs. William H. Sullivan, wife of William H. Sullivan, Executive vice president of the Bogalusa Paper Company, Inc., Bogalusa, La., passed away at her home December 10, 1928.

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

RYTHER SHREDDER



FURNISHES STOCK AT HIGH DENSITY

This unit prepares unbleached sulphite pulp for bleaching. The pulp is furnished in dry sheets, rolls, and soft laps. The equipment operates on an intermittent basis of four dry tons per hour. The unit is driven by a forty horse power motor.

The shredded pulp is discharged by gravity into the boot of an elevator. The elevator discharges the shredded pulp into a screw conveyor where bleaching liquor and water are added to reduce the dryness to the desired point.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED

10 PHILLIPS SQUARE, MONTREAL, P. Q.

Canadian News

Newsprint Men Reach Agreement

After a series of conferences lasting for several days, the efforts of leaders of the Canadian newsprint industry to reach an agreement for concerted action in stabilizing the industry were brought to a successful close at the end of last month. Though the exact details of the agreement were not disclosed, the heads of the more important companies are understood to have agreed on the broad issues and a plan of concerted action, and everybody seems to be satisfied that this will ultimately mean the stabilization of the industry and its return to its former prosperity. A committee of the industry will hold another meeting in Montreal in the very near future to work out the final details of the agreement. Those who attended the various meetings, both in Montreal and Quebec City, were unanimous in a desire that the present entente should be permanent, to deal with whatever problems should arise in the industry in the future. Fifteen companies, eleven from Quebec and four from Ontario, with a combined capitalization of $600,000,000, were represented at the various meetings.

It is stated that production on the basis of 80 per cent of capacity is the decision which has been reached. Nothing definite as regards the price of newsprint has been released for publication. The Hearst-International Paper three-year contract, which is stated to have been passed at a figure in the neighborhood of $50 per ton though it has not been possible to obtain either confirmation or denial of this figure, came in for a considerable amount of discussion. In the main, the opinion was that newsprint should be sold at a fixed price of not less than $55 a ton, and mention was made of $57, though as those taking part in the conferences were pledged to secrecy it could not be definitely ascertained whether the $55 or $57 price had most favor.

Since the conference itself was brought about under the auspices of the governments of Ontario and Quebec for the promotion of the public interest, as testified by both premiers, and the question of price was left to the manufacturers to settle themselves as best suited to their own interests and those of the many thousands dependent for livelihood upon this second most important industry of Canada, there was no fear expressed, as far as could be learned, as to any complications arising in Canada because of an agreement to fix the price; but the question of possible action in the United States was foreshadowed, especially should adherence to one price entail cancellation of a contract.

Investigating Labrador's Resources

The announcement that the government of Newfoundland is planning to make a survey of the resources of Labrador, with a view to development on a large scale, is attracting widespread attention to the large slice of continental America, 110,000 square miles in extent, title to which has been definitely vested in Newfoundland by the Privy Council, the Empire's final court of authority.

It is claimed by those who have knowledge of the territory that in the portion belonging to Newfoundland there are pulpwood resources having a value of from $250,000,000 to $300,000,000. The forests are composed of black spruce, white spruce and balsam. During last winter, International Paper Co. had two cruising parties in the region, one operating in the Hamilton Inlet district and the other along the southern parts of the territory. While their reports have not been made public, Dr. H. L. Paddon, of the International Grenfell Association, who is in charge of the Grenfell Hospital at Hamilton Inlet, and was in touch with these men during the period of their stay, wrote in a recent issue of the Grenfell Magazine that the result of their investigation was such as to satisfy them that the wealth of the region was under-estimated rather than otherwise. The forest growth is of practically the same density as that of the eastern portion of Quebec, where the estimate of Canadian experts is that an acre of land will produce about four cords of pulpwood. It is claimed that pulpwood could be cut in Labrador, brought to the southern coast by water, and then converted into the manufactured product, with the advantage that the southern coast is ice-free all the year round.

In addition to its forest resources, there are enormous water powers in Labrador. The territory contains one of the largest rivers in North America, the Hamilton, with a watershed of some 70,000 square miles and a length of about 300 miles. The Grand Falls on this river constitutes one of the most impressive sights to be found anywhere. They have a drop of 302 feet, as compared with Niagara's drop of 165 feet, and with the rapids above and below, could be made to produce 4,500,000 horse-power. There are many other rivers with impressive water power possibilities.

Reduction of Duty on U. S. Product Opposed

Canadian manufacturers of insulating materials strongly opposed an application before the Tariff Advisory Board at Ottawa for downward revision of the customs tariff on Celotex, an insulating material manufactured exclusively in the United States. The present rate of duty on Celotex is 17½ per cent, and the applicants requested that it be reduced to 10 or 12½ per cent.

Two Canadian companies in particular opposed the United States application for lower tariff, namely, Canada Gypsum and Alabastine, Ltd., of Paris, Ont., and Flax Fibre Products, Ltd., of Winnepeg, Man.

Hold Convention in New Association Quarters

The Sixteenth Annual Meeting of the Canadian Pulp and Paper Association will be held at the headquarters of the Association, 3420 University St., Montreal, on Friday January 25th, 1929, at 10 o'clock in the forenoon, according to a preliminary notice issued by the secretary. Immediately following the business meeting the inauguration of the new Pulp and Paper Research Institute will take place with appropriate addresses by special speakers invited for the occasion. At the conclusion of these exercises, a buffet luncheon will be served, after which the members will be invited to inspect the new building. On Friday evening the Annual President's Dinner will be held at the Ritz-Carlton Hotel, invitation thereto being confined to the executives of the association, members and a limited number of special guests.

Prior to the annual meeting of the Association, the Technical Section will hold a two-days' meeting on Wednesday and Thursday January 23rd and 24th, at which the usual program of papers and discussion will be carried out, details of which will be published in due course. The Woodlands Section will also hold its meetings on the 23rd and 24th, the first day to be occupied by an executive session open to members only. It is planned to hold a joint meeting of the two sections on Thursday afternoon, at which a program of mutual interest will be presented. Each section will arrange for its own social functions. The Thursday night entertainment, however, will this year depart somewhat from the lines of those given in late years, and will be confined strictly to members of the two sections and a very limited number of invited guests.

A special feature of this year's meetings will be a day devoted to a symposium on the fundamentals of cellulose chemistry, which is being arranged by McGill University and by Professor Harold Hibbert, of the Department of Industrial and Cellulose Chemistry. It is expected that a

Briner Economizer
Licensed Under Patents of E. A. Briner and John E. Alexander

Ross-Grewin Vapor Removal System

Ross Grinder Exhaust System

Ross Heating Systems for the Finishing, Beater and Storage Rooms

Trim Conveying

Calender Cooling

Felt Drying Systems

Ross Apparatus Will Provide Real Savings In Scores of Mills This Winter By Reducing Costs

Will Your Mill Be One of Them ?

With Extreme Cold Weather Closing In Can You Afford Not To Investigate A Method For Saving Steam in Your Plant ?

To Secure The Benefits From Lowered Operating Costs This Winter It Is Necessary To Get In Touch With Us Now.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street
CHICAGO

Main Office—30 E. 42nd Street
NEW YORK

519 American Bank Bldg.
PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

number of the leading authorities on the subject, from both Canada and abroad, will be present and contribute to the symposium.

Percy B. Wilson, of Montreal, formerly treasurer of the Canadian News Print Co., was elected to the presidency of the company at a recent meeting held in Montreal. He replaces Henry A. Wise, of New York, whose resignation was accepted by the board. Mr. Wilson is a past president of the Canadian Pulp and Paper Association, past president of the Canadian Forestry Association, and ex-vice-president of the Spanish River Pulp and Paper Mills. He is now a director of Abitibi Power and Paper Co.

Canadian-Keyes Fibre Company

For the purpose of rendering better service to its Canadian customers, the Keyes Fibre Company, Inc., Waterville, Maine, will establish a manufacturing plant in Canada, where Papyrus pie plates and butter dishes, and Savaday tableware plates will be manufactured.

The exact location of the plant has not been definitely determined as several locations are being considered. It is hoped to have the machinery for the new plant ready for installation early next spring, and the plant will probably be in production by June of next year.

QUEBEC

Price Bros. to Erect Skyscraper at Quebec

Price Bros. and Co., one of the oldest and most successful paper companies in the Dominion, are to erect a fifteen-story building in Quebec City. The structure will be an imposing one, embodying the latest perfection of the builder's art. The architects are Ross and Macdonald of Montreal, well known by their achievements in connection with the Royal York Hotel in Toronto, the T. Eaton building in Toronto, and the Dominion Square Building now being erected in Montreal.

Price Bros.' new home will be of steel structure, faced with Quebec limestone and polished granite. It will be entirely fireproof and will embody all the latest improvements in office buildings. Construction will start next spring and the building should be ready for occupancy in 1930. It will house all Price Bros.' various departments, including subsidiary companies such as Donnacona Paper Co. and the Quebec Investment Co. Quarters in the rear will be used for garage accommodation and storage.

This dominating structure will be situated next to the Clarendon Hotel on Ste. Anne Street, and will be a credit to Price Bros. and to the City of Quebec.

Wayagamack Pulp and Paper Co., Three Rivers, Quebec, is arranging to use two small M. G. machines for the production of 12 to 15 tons of waxed bread wrappers per day, for which product it has an assured market. The large machines at the Wayagamack News, Ltd. mill will continue to run on newsprint.

The Bates Valve Bag Co., of Cap de la Madeleine, is carrying out a program of extension which will ultimately result in doubling of the plant's present capacity. It is understood that the contract for this work has been given to the Stewart Construction Co., of Sherbrooke, and work has already been started. This firm, which is a subsidiary of the well-known American corporation established in Cape de la Madeleine three years ago, manufactures a patented container for flour, cement, etc., from kraft paper. It is stated that the company's Canadian business has shown very satisfactory growth, and the decision to double the plant's present capacity is an excellent augury for its future as well as that of the Canadian kraft mills.

George H. Millen, whose death was announced in these columns last month, and who rose from a job as mill worker to the presidency of the E. B. Eddy Co., Ltd., Hull, left an estate exceeding $1,000,000 according to his will. Following bequests, the residue is evenly divided among his two sons and two daughters.

Dominion Engineering and Chas. Walmsley to Merge

Reports indicate that negotiations have reached an advanced stage and that only technicalities remain to be attended to for the consummation of a deal whereby the Dominion Engineering Works, of Montreal, will acquire control of Charles Walmsley and Co. (Canada), Ltd. The latter is a former subsidiary of the well known British firm of Sir W. G. Armstrong Whitworth and Co., which was acquired by Canadian interests quite recently. The Walmsley plant is located at Longueuil, across the St. Lawrence River from Montreal.

Recent strength of Engineering stock, which advanced approximately 30 points to 115 in a short time, is attributed to this rumored acquisition, which will give the company a wider range of activity.

Royal Securities Corp. and associates purchased Charles Walmsley and Co. (Canada), Ltd., it was announced some months ago, when it was stated that energetic steps would be taken to develop the company's business. The main industry of the company, it was stated, would continue to be the manufacture of paper machines and all other machinery requirements of the pulp and paper inudstry, but other suitable lines, new to Canadian industry, would be introduced from time to time. Rhodes (Canada), Ltd., is a subsidiary of the Walmsley concern, formed to develop in Canada sheet-metal working machinery under patents purchased from Charles J. Rhodes, of Joseph Rhodes and Co., Wakefield, England.

Roy Campbell, secretary of the Canadian International Paper Co., has been appointed secretary of the Montreal committee of the National Council of Education. Mr. Campbell, who is a graduate of the University of Toronto, is also chairman of the Quebec branch of the Chartered Institute of Secretaries.

It is reported that those close to International Paper are certain that the price at which newsprint is to be sold to the Hearst papers is not the freely quoted figure of $50 per ton. It is probable that there are certain features of the contract which will never be made public which will give a little better return to International than the $50 figure.

Permission to construct a barrage at Lake Squatteck, Temiscouata, will not be accorded to International Paper Co. by the provincial Government if such project involves the submersion of the surrounding parish. Such was the substance of the replies of Premier Taschereau and the ministers of the interested Departments, the Hon. J. E. Perrault, Minister of Colonization, Mines and Fisheries, and Hon. Honoré Mercier, Minister of Lands and Forests, when an imposing delegation, headed by Monseigneur Georges Courchesne, Bishop of Chicoutimi, waited on the Cabinet last month to petition against the according of permission. The company can do absolutely nothing until complete plans are furnished to the Department of Lands, the Premier assured the delegation. The preliminary plans had proved absolutely unacceptable.

The paper mill at the Pulp and Paper Research Institute is taking on a very business-like appearance. E. Parke Cameron, director of the Pulp and Paper Division of the Forest Products Laboratories and his staff are busily engaged in the installation of equipment, some of which has been specially designed and built for the new building.

The construction of the new machine room at St. Lawrence Paper Mills, Three-Rivers, is practically completed and erection of the two paper machines is well under way.

Paul Bunyan Is Here!

In those delightful fables of the North Woods, Paul Bunyan does wondrous works, far beyond the realm of human possibility, always on a gigantic scale.

But what was the miracle of yesterday is the reality of today. Norton Pulpstones — modern giants — with speed and regularity shred the millions of logs which flow down to the paper mills.

Mere man could not compete with Bunyan in the North Woods. Even so the old quarried sandstones yield to the prowess of pulpstones, manufactured by Norton. The North Woods bow in homage to the new abrasive giant.

Norton Company, Worcester, Mass.
Canadian Trade now supplied from Canadian Plant.

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

Everything possible is being done to have one of the machines running by the 15th of this month, and both machines in operation by the first of the year.

A fire of unknown origin recently destroyed an entire frame wing of the Bishop and Sons mill at Portneuf. Damages amount to over $20,000, which includes about $15,000 worth of machinery. The bulk of this amount, however, is covered by insurance. The plant is unable to continue operation, and nothing is known yet concerning the rebuilding of the mill.

Dominion Boxboard, Ltd., have appointed C. de Wolf Reid as representative for Eastern Canada. Mr. Reid has had a large experience in the manufacture and sale of boards.

Notice has been given that all of the outstanding six and a half per cent ten-year sinking fund mortgage debentures of St. Lawrence Paper Mills, Ltd., dated as of January 2nd, 1926, which would according to their terms mature on January 2nd, 1936, will be redeemed by the company, pursuant to the terms of the Trust Deed, on January 2nd, 1929, at par with a premium of two per cent and accrued interest to date of redemption.

George W. Charters, general superintendent of the news and pulp mills and Stanley W. Blanchard, superintendent of the groundwood, sulphite and bleach plants of the E. B. Eddy Company, Hull, Quebec, have resigned to go with the Crown Zellerbach Company, one of the Pacific Coast's largest paper manufacturers.

Possibilities of Anticosti Described

The unique environment of Anticosti Island was recently explained to an interested audience at the Engineering Institute of Canada, Montreal branch. J. H. Valiquette, manager of the island, and T. B. Fraser, resident engineer, were the speakers and dealt with the history and natural development of the island.

Mr. Valiquette said that the forests on the island would be equivalent to 11,000,000 tons of newsprint. He described the long and interesting history of the island from the time when it was granted by King Louis of France to his hydrographer, and later bought by Senator H. E. A. Menier, of Paris, for $125,000, and still later sold to the Anticosti Corporation for $6,000,000.

Mr. Fraser dealt with the engineering aspect of the island, and expained that there were facilities for water power, development of which was under consideration.

ONTARIO

Dryden Unaffected by Newsprint Crisis

The unsatisfactory developments in the newsprint market have had and probably will have no really adverse effect on the operations of the Dryden Paper Co., of Dryden, although the debacle in newsprint prices may have a sympathetic effect marketwise on Dryden shares. The plant is operating at capacity and profits still remain at the satisfactory level experienced earlier in the year.

Lower newsprint prices mean lower prices for groundwood and sulphite pulp; hence, there is a tendency for lower prices in other grades of wrapping paper which could reduce the price of sulphate pulp and ultimately of kraft paper. Those with a knowledge of the sulphate pulp and kraft paper industry, however, feel that such a development is not even a possibility, for kraft paper is the latest comer in the wrapping paper field. The industry has always felt the pressure from the lower grades of paper. But when kraft paper was developed it broke very successfully into the market for wrapping paper and is steadily gaining in favor despite lower prices of other grades, the reason being the manifold superior characteristics of kraft. In any event, United States kraft paper cannot enter Canada without paying a high duty, and those with a knowledge of the kraft industry feel that the market for Dryden's surplus output of sulphate pulp will not be affected by the decline in newsprint, more especially as the past year or two groundwood pulp has been selling at levels below which it can hardly move, and, in addition, sulphite pulp markets have also been weak.

Hence, the satisfactory outlook for Dryden's future remains unchanged and will not be affected by any developments which have, or which may take place in the newsprint industry. It is understood that those behind the company are still working along lines leading towards a reorganization, but that it will take some time to formulate the reorganization plans.

Formation by Howard Smith and Harold Crabtree of the Alliance Paper Mills Co., through the purchase and merging of Ritchie and Ramsay, Toronto, Georgetown Coated Paper Mills, and the Lincoln Pulp and Paper Co., at Merritton, has now been completed, with a central office in the Atlas Building, Toronto. The new company figures that by the redistribution of tonnage on certain grades it will be possible to effect economies in production cost and thus avert increases in the price of the product. The executives, in organizing the new concern, are looking ahead and anticipate the effect of natural forces that are already in evidence in the industrial world. The grouping of the mills under a single operating control gives each plant the benefit of the experience and advice of several additional heads. It is not intended to install any new machinery, but some overhauling will probably be carried out.

The Toronto paper trade was shocked last month at the news of the death in a motor crash of Thomas Armstrong, Toronto representative of the Laurentide Company, and widely known throughout the newsprint industry in Canada. He handled practically all the newsprint that came into that city, which brought him into close touch with the printing and publishing trades, as well as with the paper industry generally. Mr. Armstrong was one of four citizens to lose their lives in a crash on the Provincial highway near Barrie.

Abitibi Jottings

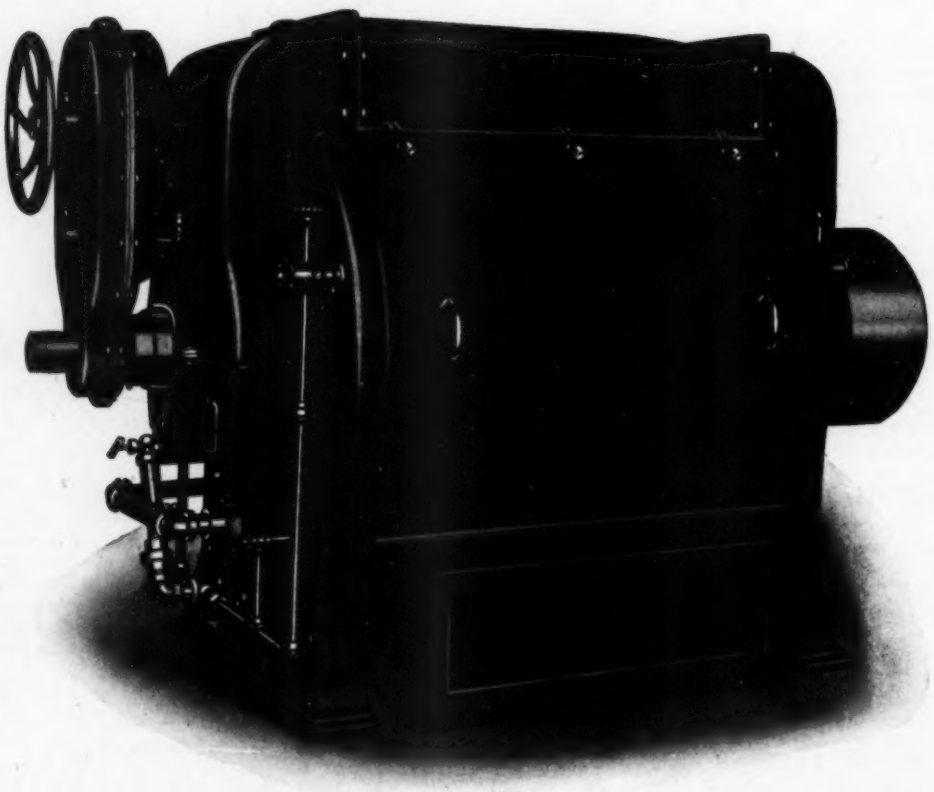
Some months ago it was announced that the Abitibi Power and Paper Co. had acquired property in Toronto, on which the erection of a head office building was planned. This site was sold to Canada Life Insurance Co., which is erecting a head office building on it and adjoining property. Abitibi has purchased another site and is preparing plans for an attractive building that will be in keeping with the neighboring properties on University Avenue.

Production at the Espanola, Sault Ste. Marie and Sturgeon Falls Divisions of Abitibi has been increased. While the renewed activity may only be temporary, nevertheless the increased employment augurs a better market and is gratifying to the citizens of the three paper towns. The payroll at Sturgeon Falls amounts to about 300 men. During the period of depression only one machine was working, while two are now in operation, which is two-thirds of capacity. Epanola is running at more than half capacity, providing employment for about 300 men, an increase of nearly 150 men over the force maintained this summer when only one machine was running.

With knowledge of the extensive and favorable work done in other countries, and having considerable areas of suppressed spruce in swamp or muskeg types on their limits, H. B. Schanche, manager of the woods department of Abitibi, decided to carry on certain experiments to ascertain what the results would be upon the growth of trees of draining swamp areas in that district, and ditches were dug in 1922, draining certain areas on which careful data has been kept, and with most remarkable results. In the first year after drainage, little difference in rate of growth was noted. In the second year, the rate of growth in diameter increased

REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

up to 200 per cent. In the following years and up to the present or sixth year, the rate of growth has annually shown an increase of from 300 to 500 per cent. The experiment is considered a pronounced success, and the company is about to launch a similar research project on a much broader scale, where complete and detailed data can be collected on the thousand and one phases which will present themselves in the course of such a study. It would seem from such very general observation that have been made to date that this project may possibly in due course show definitely the economy of adapting this form of soil treatment to vast areas in the northern parts of Ontario and Quebec, which are now either totally unproductive as muskegs or at best support only a more or less stunted and exceedingly slow-growing stand of timber, much of which cannot in the ordinary course of events become merchantable for an indefinite period.

Improvements Installed During Shut-Down

During its temporary shut-down new machinery of the most modern kind to the value of $180,000 is being installed at the Fort William Paper Co.'s mill at Fort William. When it is again brought into operation, it will be equipped with one of the latest devices for drying the paper as it passes over the rolls, in the form of electric suction presses, which will facilitate the drying of the web of paper and make the operation of the plant much more effective.

The greater portion of the new machinery already has been delivered at the mill and there are only some parts still to arrive before the whole equipment will be ready to install. In view of this expenditure and the approaching completion of the new installation, it is believed that the mill will not remain closed for long after the work is finished.

The machines of the Great Lakes Paper Co., at Fort William, are now running smoothly and the plant is running full time, for the present. New machines need a considerable amount of breaking in before they are running approximately 100 per cent efficient; but this has been practically accomplished and the 245-inch fourdrinier is operating smoothly. Joseph Dwyer, general superintendent of the mill, who had been in Toronto, as a result of illness, has returned and resumed his duties. Construction work on the sulphite mill is going ahead rapidly.

Preliminary plans are being prepared by a Toronto firm of architects for a fine new office building to be erected on University Avenue, Toronto, by Provincial Paper, Ltd. The tentative plan calls for a two-story structure, 50 by 150 feet, and of dignified type of architecture. It will also house the head office of Interlake Tissue Mills, Ltd., whose mills are at Thorold.

Paper box manufacturers from various parts of Canada included in the membership of the Canadian Paper Box Manufacturers' Association and the Toronto Carton Council were guests of E. D. Newell, president of Dominion Boxboards, Ltd., recently, when they were shown over the company's new mill on the Toronto waterfront. The visitors were greatly impressed by the modern equipment installed for the manufacture of boxboards.

Victor Donaldson, president and general manager of Firstbrook Boxes, Ltd., manufacturers of wooden boxes, corrugated shipping containers, paper cartons, etc., was recently in Winnipeg on business and it is said that his company intends invading the West. The company's present headquarters and chief manufacturing plants are located in Toronto, but will early in the new year be transferred to one large factory at Mount Dennis, a suburb of Toronto, which will, on completion, constitute the most modern plant devoted to the package industry in the Dominion. It is stated that the company is already exceeding the volume of business looked for at the time of the merger of the constituent companies, and with the growth of Canadian industry it feels the necessity for further expansion of its manufacturing facilities to cope with continually increasing demand.

Application has been filed in the Toronto city architect's office for the erection of a four-story and basement addition to the plant of the Hinde and Dauch Paper Co. of Canada on the southwest corner of Liberty and Hanna Streets. The new structure will be 160 by 400 feet and will cost $250,000. The company is a large manufacturer of box board and already has in operation a large plant at Trenton for the manufacture of strawboard for corrugating purposes. Work on the Toronto plants, contracts for which have been let, is already under way.

Definite decision to establish a branch in Regina has been made by the Dominion Envelope and Cartons, Ltd., Toronto. The firm has been contemplating this move in Saskatchewan for a considerable time and is already established in Manitoba and Alberta. The organization includes the following companies: Dominion Envelope and Cartons, Ltd., Dominion Boxboards, Ltd., Dominion Printing and Carton Co., Edmonton, Alta., and the Winnipeg Paper Box Co., the Dominion Envelopes and Cartons Western, Ltd., and the Hitchens Box Co., Winnipeg, Man.

A number of Toronto paper wholesalers attended a meeting of the Canadian Chemical Association at the University of Toronto, last month, when the matter of the paper trade's co-operation in the Research Foundation established by the Ontario Government was under discussion.

Papermaking operations at the plant of the Thunder Bay Paper Co. were resumed November 12th, after several departments of the mill had been closed down for a short time. In the absence of C. E. Jackson, general manager of the mill, information as to what contracts had been secured was not obtainable, but it is understood that the company has been able to secure some contracts that will keep the mill running indefinitely. It is understood that other contracts are in prospect. During the temporary shut down, workmen on the payroll were paid a percentage of their salaries.

Removal of the plant of the Adams Cell Board Co., Toronto, to the Kitchener Paper Box Co.'s plant at Kitchener has been completed. The latter company purchased the equipment of the Adams Cell Board Co. when that organization decided to concentrate its operations at its plant near Dundas, and most of the machinery will be utilized by the Kitchener company for the manufacture of corrugated boxes, which they have not hitherto manufactured.

C. W. Iliff, of John Dickinson and Co., Ltd., paper and board manufacturers, London, England, is spending some time in Ontario visiting paper mills and distributors in various parts of the province.

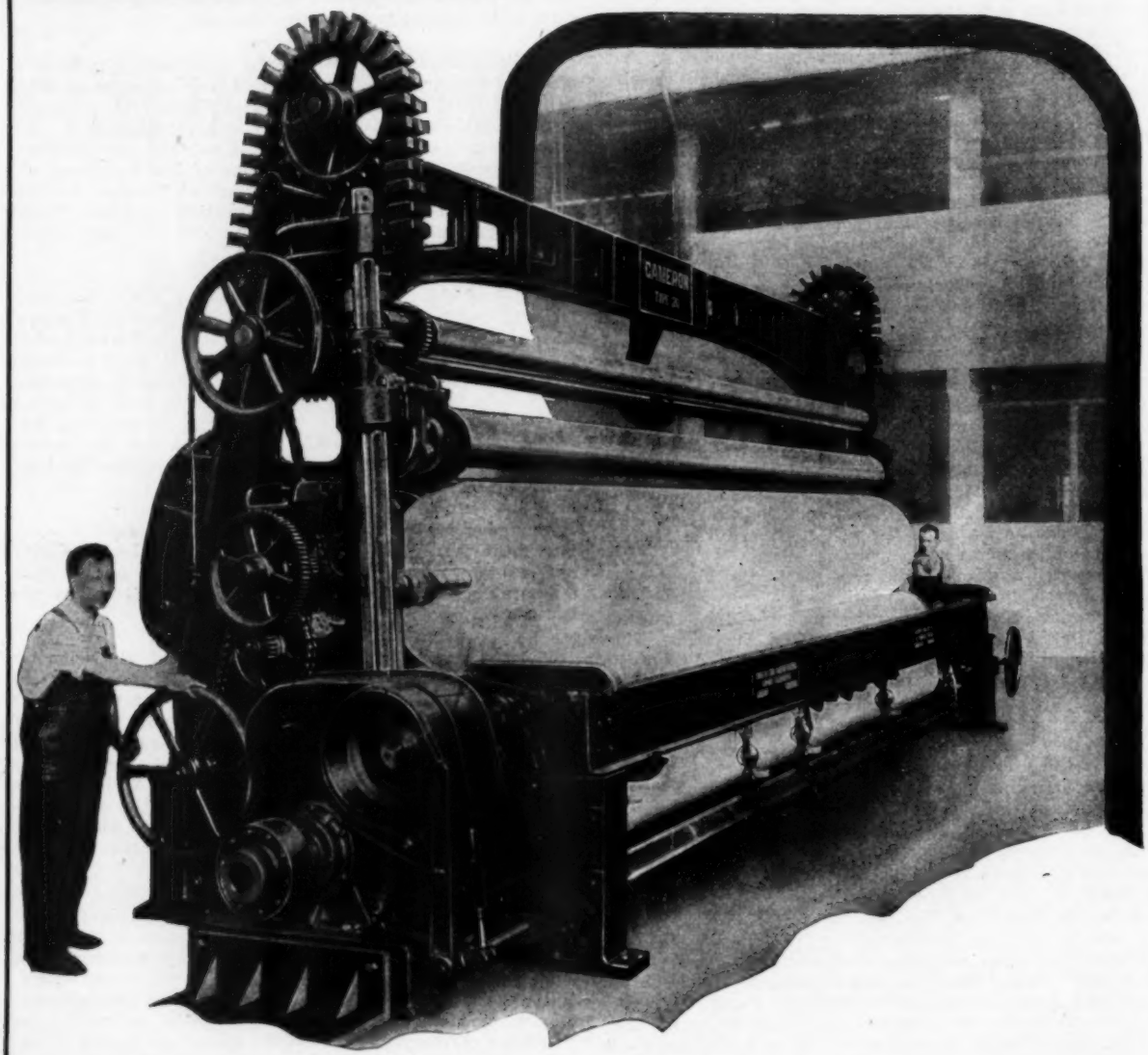
The International Fibre Board Co.'s plant at Midland, which is devoted to the manufacture of wood fibre solid insulating wall board, is closed down for the time being and the plant is being overhauled.

NEW BRUNSWICK

I. P. Co. Completes Plans for Two Mills

International Paper Co. have bought the so-called McLaggen property at Morrison's Cove, near Chatham, as their first definite move towards the erection of a pulp mill on the Miramichi River. The purchase has been confirmed by International Paper officials, and it is said that a bleached sulphite mill with a daily capacity of 100 tons is to be erected.

Initial steps are also reported to have been taken by In-



What Camachine 20 Can Do

SPEED—3000 feet per minute.
SLITTING—Absolute accuracy insured.
ROLL QUALITY—Firm, smooth rolls.
STRENGTH—Flawless material built into scientific design.
OPERATION—Design simplicity makes for ease of operation.
EFFICIENCY—A combination of these and other Cameron features that makes modern mill equipment demand CAMACHINE efficiency.

We have interesting catalogues containing detailed information on all types of CAMACHINES. *Write us your requirements, and you will receive one by return mail.*

Cameron Machine Company, 61 Poplar Street, Brooklyn, New York

ternational Paper for the construction of a pulp mill at St. Leonard, across the St. John River from Van Buren, Me., whence it is planned to pump the pulp through a pipe to be manufactured into paper for heavy bags at the Van Buren mill, as is now being done between the Edmundston, N. B., and Madawaska, Me., mills of the Fraser Companies.

From Campbellton it is reported that Fraser Companies, Ltd., through the Restigouche Co., a subsidiary, have started preliminary work at Athol, near Campbellton on Baie des Chaleurs, for the erection of their large bleached sulphite mill. The site is being cleared and construction materials are arriving, so that work on the concrete foundations can be started immediately. Fraser Companies have already completed enlargements of their pulp mill at Edmundston, on the St. John River, where they have recently also established a paperboard mill.

Bathurst Proceeding with Extensions

The Bathurst Power and Paper Co. has adjusted its differences with the town of Bathurst in regard to taxation, and the way is now open for completing the extensions to the company's plant. The new equipment is already at the plant, but the installation of the new machine, with a capacity of 75 tons a day, had been delayed pending the outcome of litigation between the municipality and the company touching the assessed valuation of the plant.

Notice has appeared in the Royal Gazette of the intention of the Bathurst Power and Paper Co. to apply to the Lieutenant Governor-in-Council for permission to construct and for approval of plans and specifications for construction of a storage dam on the Nepisiguit River for log-driving purposes. The proposed dam is to be constructed at or near the foot of Nepisiguit Lakes, near the mouth of Moose Brook, the dam to be about 900 feet in length across the river, and to create a head of water of about six feet, to be provided with log roll, sluice gates and a canoe and fishway passage.

B. H. Himman, of Omaha, was recently in New Brunswick in connection with long term leases for pulp and paper developments. He has been reported as representing interests involved. At St. John he conferred with Premier Baxter and at Fredericton had a conference with Hon. C. D. Richards, Minister of Lands and Mines. It is understood that Mr. Himman has been gathering data in the province, but the exact nature of his mission was not revealed.

Lessees of fishing rights on the rivers and streams on which pulp and paper mills will be erected have objected to injuries that would be inflicted on their rights by chemicals from the mills. Fishing clubs are said to have inquired as to whether or not their interests are taken into consideration in the allotment of the mill sites, and if provision is being made for them.

NOVA SCOTIA

It is estimated that about 3,000 horsepower will be required for the new Hantsport pulp mill of the Minas Basin Pulp and Paper Co. To prepare for this demand, the Avon River Power Co., parent of the Minas Basin Pulp and Paper Co., has recently completed additional development at Avon Falls. This provides for 4,350 horsepower. Within two years of the start of activities at the Hantsport pulp mill it is expected that the production will be substantially increased, and more power will be needed. The installation of the additional power facilities at Avon Falls, as well as the supervision of the erection of the pulp mill, have been under the direction of R. A. Jodrey, general manager of both parent and subsidiary companies.

It is reported that sufficient space has been secured on the seashore between the bridge at Liverpool and Brooklyn, N. S.,

WALDRON Paper Rolls

Cost Less because They Live Longer

Figure the utilization cost of your paper rolls! Compare the yardage run or number of operating hours of service to their initial cost!

Waldron Paper Rolls are built to stand up in service—better and longer. For this reason they prove the most inexpensive to buy.

You can prove this yourself!

Have you an instruction sheet on How A Paper Roll Should Be Run In? We will gladly send you one on request.

JOHN WALDRON CORPORATION

Main Office and Works—New Brunswick, N. J.

208 W. Washington St. CHICAGO

30 East 42nd Street NEW YORK

PORTLAND, ORE. 519 American Bank Bldg.

New Birks Bldg.—Montreal, Can.

Fourdriniers of Quality Is Our Goal

Every man in our organization, from wire drawer to packer, has become imbued with the thought that nothing is quite so important in fabricating a Fourdrinier Wire as vigilance. Eternal Vigilance always results in Quality. This is an invariable rule. Because our men are vigilant, we are enabled to produce infinitely better Fourdrinier Wires today than ever before.

They are Quality Wires in every sense of the term—High Quality and Known Quality. Many mills have come to appreciate their worth. Is your mill among that number? If not, we urge you to give our wires a trial.

As ever our Cylinder Moulds and Dandy Rolls are of unsurpassed excellence.

CHENEY BIGELOW WIRE WORKS

Established 1842 *Springfield, Mass.*

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

for facilities for shipping and storage on behalf of the new pulp and paper mill of the Mersey River Paper Co., sponsored by the Royal Securities Corporation. Two properties are said to have been obtained.

BRITISH COLUMBIA

Newsprint Situation Delays Developments

Just as soon as the pulp and paper situation improves, British Columbia will swing into line with a mill construction greater than anything since the pioneer era of the last decade when the Powell River Co., Pacific Mills and the Whalen organization were brought into being on the coast. If conditions were better, three pulp and paper mills of considerable size would now be building. Negotiations for these projects have been carried on with the provincial government for some months, and they have reached the stage where all the preliminary details have been smoothed out and construction awaits only an improvement in the world market which will ensure profitable operation.

The three chief enterprises are those of the Crown-Willamette Co. of California and Oregon, the Canadian Forest Products, Ltd., and eastern financial interests who propose to build a large mill near Prince George. The Crown-Willamette plant is to be located on the Campbell River, Vancouver Island, and the Canadian Forest Products, Ltd., backed by the International Harvester Co. to the extent of $16,000,000, is planning a mill at Nimpkish River. All these projects will utilize important water powers that are dormant at present and they will add enormously to the paper production of the province.

Preliminary work has been started on the development of a $2,000,000 pulp and paper mill at Port Mellon, on Howe Sound, about 20 miles from Vancouver. The Vancouver Kraft Company, representing the Columbia River Paper Co., of Washington, Oregon and California, which recently purchased the old Port Mellon plant, plans to install a lumber mill with a producing capacity of 200,000 feet a day, and a pulp mill of 200 tons capacity. The first unit of the pulp mill will have a daily capacity of 100 tons.

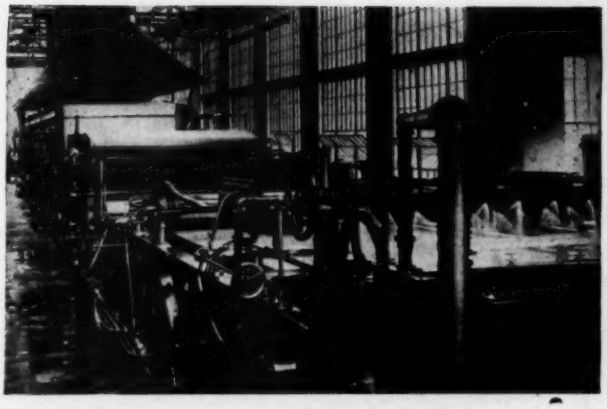
BRITISH CORRESPONDENCE

Paper Trade News and Conditions

Increasing export and the growing demands of publishers account to a great extent for the fact that, in spite of a decline in the printing industry, British papermakers are experiencing no difficulty in maintaining a good output. In fact, it is anticipated that when the total tonnage for this year comes to be computed, British consumption will show an increase over any previous year. Unfortunately, owing to a lack of uniform co-operation in the trade, it is impossible to obtain complete monthly or quarterly statistics of home consumption or output. There are many firms, in fact, outside the Papermakers' Association, who fail to furnish any figures as to output at all, and even some members of the Association are induced to supply it with difficulty.

Canadian newsprint imports have shown a considerable increase. In the period January to September of this year we received from that country 1,139,634 cwt. against 379,948 cwt. during a corresponding period last year; while from Newfoundland we have taken 1,163,630 cwt. against 1,122,463 cwt. A slight falling off is registered in newsprint imports from Europe, and, in spite of the increases in exports from the Dominions, British mills are well booked up with orders for the present and the near future.

The newsprint position, however, is not altogether satisfactory, although there is at present a big consumption of newsprint, for surplus production and too rapid developments in other parts of the world have brought home prices down to a dangerous level. Reports from Canada go to show that some of the mills are endeavoring to maintain standard



Oakite cleans felts in record time

WHEN the felt washer broke down in a certain southern mill, Oakite cleaning was introduced to meet the emergency. So quickly and thoroughly did Oakite do the job that it is now standard in this mill. Felts are cleaned right on the machine. A warm Oakite solution is simply poured on them for ten minutes; then sprays are turned on and run for fifteen minutes. Twenty-five minutes for the whole operation—yet the superintendent says that results are more than satisfactory.

Oakite cleans safely, too.—Every trace of dirt, sizing and other foreign matter is removed without harming the fibres in any way. And Oakite leaves felts soft and absorbent because it rinses away completely.

Keep felt replacement expenditures down by washing with Oakite. Let an Oakite Service Man call and prove the worth of this remarkable cleaner on your next felt cleaning job. A post card will bring him.

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal. *Omaha, Neb., Oshkosh, Wis., *Philadelphia, Phoenix, Ariz., *Pittsburgh, Pleasantville, N. Y., Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Waterbury, Conn., Wichita, Kan., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

LOBDELL

IMPROVED ROLL GRINDING MACHINE

A new model with enclosed geared driving head and full automatic lubrication including the Vs. and the feed-screw.

RAPID
ACCURATE
LONG-LIVED

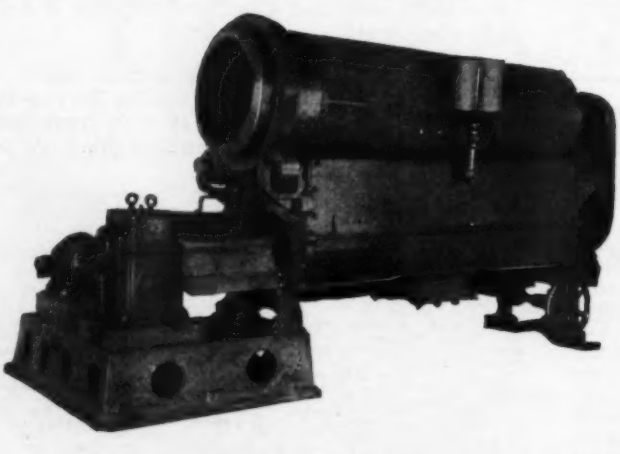
The automatic crowning device and the provision for leveling the bed are exclusive features of the Lobdell Roll Grinders.

LOBDELL CAR WHEEL COMPANY

Established 1836

WILMINGTON, DELAWARE

WORM GEAR SPEED REDUCERS



In any ratios **Standard ratios in stock**

The users of this mixer have been so well pleased with the performance of their Horsburgh & Scott Worm Gear Speed Reducer drive that it is now specified as standard in their entire plant. This preference is not the result of high pressure merchandising methods but is due to one quiet efficient salesman—their original Horsburgh & Scott Worm Gear Speed Reducer. It is gratifying to know that "performance counts."

We also manufacture a complete line of Heli-Spur and Herringbone Speed Reducers. May we have your inquiries?

The Horsburgh & Scott Co.

5114 Hamilton Ave. *"Gear Makers Since '89"* **Cleveland, U. S. A.**

Gears for Every Industrial Purpose—Worm—Bevel—Herringbone—Spur—Spiral—Hardened Heat Treated Gears —Non-Metallic Gears and Pinions

prices, while others are still further endeavoring to increase output capacity in the hope of still further increased business with Australia and New Zealand.

Much controversy still exists in the British paper trade on the merits and demerits of the safeguarding policy in so far that it affects the wrapping paper industry. It depends, of course, upon the angle from which it is viewed. The wrapping mills in this country are being kept busy, and many of them have carried out extensive improvements in their plant and equipment since the imposition of the tariff, and quality has been improved to such an extent that there is little or no difference between British and Scandinavian wrappings. In spite of the tariff, there has been a noticeable increase in the imports of packing and wrapping paper. Exports and re-exports have also gone up in comparison with last year.

Discussing this subject recently, Captain W. E. Nuttall, chairman of the National Union of Wrapping Paper Makers, said that, after the boom year 1920, British wrapping mills were getting an always lessening share of the total trade, and the foreign mills a constantly increasing share. He pointed out that, out of something like ninety mills engaged in the wrapping trade, twenty went out of business in the six years which followed the war, and machines engaged on wrapping paper were being diverted to other classes of paper. In his opinion, there is little doubt that the effect has been beneficial. It can be said quite definitely that the prices of British wrapping paper are in every case considerably lower than they were at the time the duty was enacted. Mills have definitely been able to obtain a greater output in consequence of the larger amount of business at their disposal, and they are consequently enabled to cheapen their cost of production.

The following comparative tables from a special supplement of The Daily Telegraph provides interesting food for thought on the wrapping paper situation:—

IMPORTS.	Tons.	£	Price per ton. £ s. d.
1923	191,633	4,723,191	24 13 0
1924	211,337	5,112,495	24 4 0
1925	224,419	5,413,677	24 2 0
1926	199,598	4,666,938	23 8 0
1927	177,120	3,931,396	22 4 0
4 m'ths incl'd'g April, 1928 ..	54,312	1,162,810	21 8 0

HOME PRODUCTION.
(Mills only that have made weekly returns throughout.)

1923	97,592 tons.
1924	96,910 "
1925	101,331 "
1926	101,710 "
1927	107,222 "
1928 (at rate of)	109,200 "

Paper Maker Warns Against Timber Waste

Considerable interest has been aroused among all members of the British paper trade in the second warning recently issued by Frank Barnjum, one of the leading papermakers of Canada, with reference to the wasteful cutting of timber for pulping and other purposes. This warning took the form of a letter to The World's Paper Trade Review, in which Mr. Barnjum says:

The enormous overcutting of our forests is draining the country of its most valuable and vitally necessary natural resource, much of which is to be converted into newsprint paper, a commodity that, for the next four or five years at least, is bound to be manufactured without any profit to the mills, owing to its large over-production. This over-production is continually being added to through the erection of more and still more new mills. Consequently we are forcing our great pulp and paper industry to the wall. We are sacrificing the last of our forests and bankrupting a great industry at the same time. Conservation, regulation of the cut and effective lumber slash (the tops and small branches cut from the timber) disposal, are the only means by which the newsprint industry can be saved from ultimate ruin and Canada from losing one of her premier industries.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

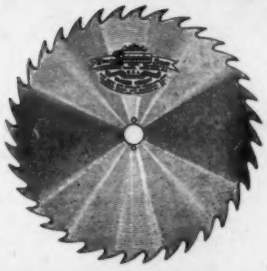
JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

SIMONDS

Circular Saws and Machine Knives

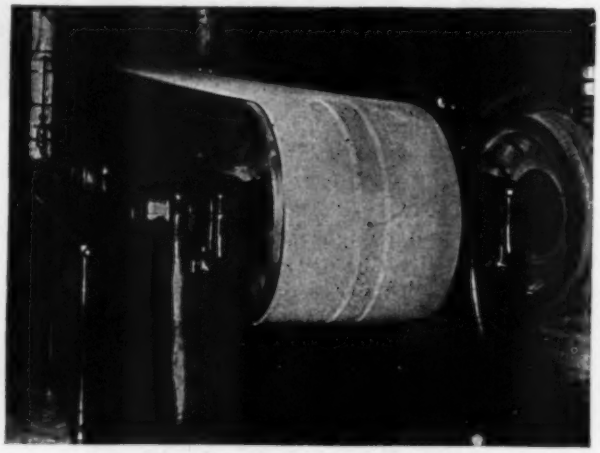


For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.

Established 1832
Fitchburg, Mass.

Boston Chicago



A Hard Drive

A real belt was needed for this job—transmitting 325 H. P. from a 144" engine pulley to a 33" generator pulley only 16' away—that's why Pacemaker was selected. In return, Pacemaker is giving continuous, low cost service.

In fact, wherever the drive is either hard or fast, there Pacemaker will handle the job economically. That's the reason that for a quarter century Pacemaker has been a standard for belt performance.

Photograph of a 28" x 9 ply Heavy Pacemaker belt on the generator drive of a large terra cotta company in the East.

Another Pacemaker Performance

The Cincinnati Rubber Mfg. Co.
Cincinnati, Ohio, U. S. A.

are you?

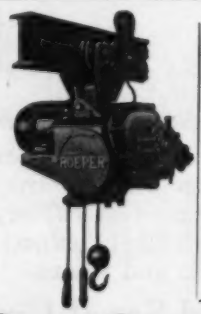
Many concerns such as Dill and Collins in Philadelphia are lowering their costs by using

BUTTERWORTH *Calender* ROLLS

Canadian Representative:
Hamilton, Ontario, Canada
W. J. Westaway Company

H. W. BUTTERWORTH & SONS CO.
ESTABLISHED 1820
PHILADELPHIA, PA.
PLANTS AT PHILADELPHIA AND BETHAYRES

Southern Office:
1211 Johnston Bldg.
Charlotte, N. C.
Providence, R. I. Office:
Turks Head Building

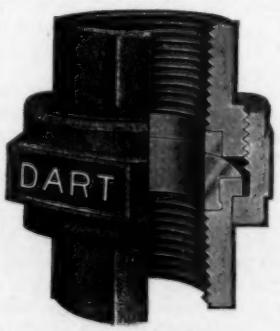


Here is an
Electric Hoist
that makes a Chain Block seem an extravagance.

ROEPER Type "R" Hoists are built in capacities from 500 lbs. to 4000 lbs. with or without trolleys—Cord or Push Button Control.

Send for Circular

Roeper Crane & Hoist Works, Inc.
1729 North Tenth St. READING, PA.
Member of Electric Hoist Manufacturers Association



Know the merits of the Dart Bronze to Bronze ground seat Unions

Try a free sample

Strength of Malleable Iron in combination with
2 Two Non corrosive seats of bronze

E. M. DART MFG. CO.
Providence, R. I.

Distributors
The Fairbanks Company
New York and Branches

Canadian Factory
Dart Union Co., Ltd.
Toronto, Canada.

Commenting on this, one paper trade expert in this country says: "There are many who do not agree with Mr. Barnjum's pessimistic forecasts, and who believe that with ordinary care there will be sufficient material for the North American paper mills for all time, but we cannot shut our eyes to the fact that there is a growing feeling that all is not as satisfactory as it should be, and that the continual building of new paper and pulp mills with ever increasing capacity is a great mistake.

Import and Export Figures

Below are set out the values of paper trade imports and exports during the month of October, together with the increases and decreases as compared with the corresponding month for the two preceding years:

IMPORTS:

	Oct., 1928.	Inc. (+) or Dec. (—) as compared with 1927.	Inc. (+) or Dec. (—) as compared with 1926.
Paper-making M'terials	863,902	—213,731	—13,095
Paper and Cardboard..	1,619,772	+24,856	+337,372

Quantities of the same articles imported:

	Oct., 1926.	Oct., 1927.	Oct. 1928.
Paper, cwt.	1,312,062	1,707,145	1,802,402
Wood pulp, tons	93,253	126,392	118,418

EXPORTS:

	Oct., 1928.	Inc. (+) or Dec. (—) as compared with 1927.	Inc. (+) or Dec. (—) as compared with 1926.
Paper-making M'terials..	121,422	—3,426	—27,159
Paper and Cardboard..	810,554	—35,834	—144,599

Quantities of the same materials exported:

	Oct., 1926.	Oct., 1927.	Oct., 1928.
Paper-m'k'g m'ter'ls, tons	16,158	16,963	17,481
Paper & Cardboard, cwt.	462,733	393,739	350,535

The British Industries Fair

A London correspondent reports that the British Industries Fair, which is organized by the British Government and the Birmingham Chamber of Commerce and which opens at London and Birmingham, England, simultaneously on February 18th, 1929, is breaking all previous records. Reports show that all available space at the White City in London has been taken and the Birmingham Chamber of Commerce have been obliged to restrict exhibitors to the barest minimum at Castle Bromwich in Birmingham.

The last Fair was an outstanding success and was visited by well over 100,000 trade buyers. Every country in the world sent numerous representatives, and buyers from the United States reported that they found the Fair of the greatest value and that they were saved a great deal of time and trouble in getting their requirements.

The first British Industries Fair was partly a war measure; it was held in 1915. Year by year the Fair grew. By 1920 it was one of the important events of the year's trade to those industries which were in the habit of showing at it. It was in 1920 that a new development took place, a new section of the Fair being opened at Birmingham Chamber of Commerce.

The London section has been held in various places, first at the Royal Agricultural Hall, later at the Crystal Palace, and now at the White City. The Birmingham authorities, with great courage and foresight, have year after year expended considerable sums of money in enlarging and improving the buildings at Castle Bromwich, in which they hold their section.

British Consulates in all parts of the world are provided with complete information regarding every section of the Fair and trade buyers can also obtain from them the official admission cards, free passport visas, etc.

The Perkins & Squier Co., paper dealers now at 100 Hudson St., New York, has leased new quarters in the Pennsylvania Building at 225 West Thirty-fourth St., for executive offices, and will soon move to the new location.

Foxboro controlled the moisture content

of this paper

On the first paper dried under Foxboro Control, the E. B. Eddy Company, Ottowa, Canada, wrote to our Canadian representative as follows:

"This is the first paper dried with a Foxboro Paper Machine Temperature Recorder-Controller. It is special paper, unfinished, not calendered, and dried to less than 6% moisture content,—to be used for cheap magazines. Controller working well."

Uniform moisture content, saving in steam, no under or over drying—these are the big advantages you get by installing Foxboro Duplex Temperature Controllers on your drying rolls.

Perfect control of your drying system is an important factor which will help you to attain high speed, uninterrupted runs. Each Foxboro Recorder-Controller is sealed with a guarantee that the Instrument will do the work for which it is intended. You take no chances.

Write to the nearest Foxboro Engineer. He will tell you how you can get better results with Foxboro Control.

Foxboro Automatic Duplex Temperature Recorder-Controller

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U.S.A

NEW YORK · CHICAGO · BOSTON · PHILADELPHIA · DETROIT
PITTSBURGH · CLEVELAND · ROCHESTER, N. Y. · ATLANTA
PORTLAND, ORE. · TULSA · LOS ANGELES · SAN FRANCISCO
DALLAS

FOXBORO

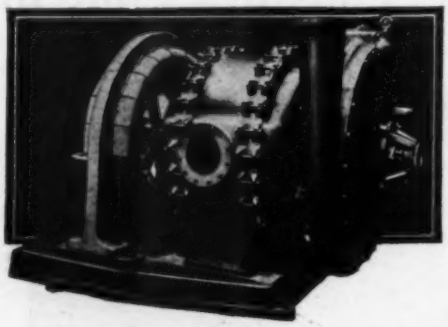
REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

INSTRUMENTS FOR CONTROLLING, RECORDING AND INDICATING TEMPERATURE, FLOW, HUMIDITY AND PRESSURE

Direct synchronous motor drive is

compact—efficient—simple



Jennings Flat Box Pump
Capacities from 150 to 1,500 gallons of water per minute together with 80 to 1,160 cubic feet of air per minute at 10 inch vacuum.

COMPACT. Since the impeller of the Nash Hytor Vacuum Pump is mounted on the motor shaft, compactness is secured and a considerable saving of floor space is made available.

EFFICIENT. No transmission losses between pump and motor.

SIMPLE. Gears, chains and belts are done away with. As a result, construction is more simple—also more economical, eliminating the need for frequent lubrication, readjustments and repairs which gears, chains and belts involved.

Write for Bulletin No. 11.

NASH ENGINEERING COMPANY
162 Wilson Road South Norwalk, Conn.

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Square, Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., 80 E. Jackson Blvd., Chicago, Ill.

Jennings Pumps
THE NASH ENGINEERING CO. WILSON ROAD, SOUTH NORWALK, CONN.

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

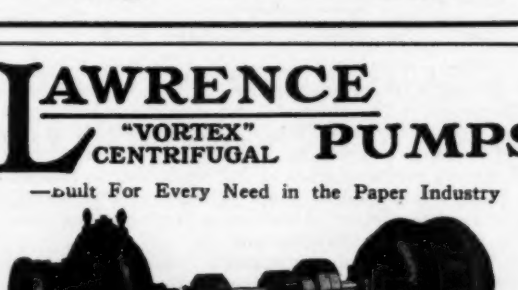
Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

LAWRENCE
"VORTEX" CENTRIFUGAL PUMPS
—Built For Every Need in the Paper Industry



DAY IN—DAY OUT PERFORMANCE THAT'S WHAT COUNTS

A NON-CLOGGING PUMP that will handle your stock of high consistencies with unusual efficiency. Delivers a steady flow of stock faster, more efficiently, will not clog, and requires no attention.

Rugged construction throughout. Heavy shaft. Oversize heavy duty Ball Bearings guarantee long life with least attention.

Our Engineers are always ready to help you with pumping problems. Write for Bulletins.

Lawrence Pump & Engine Co.
P. O. BOX 70,
LAWRENCE, MASS.
New York Office:—90 West Street

NEW ENGLAND NEWS

Pope Appliance Wins Suit Against Spanish River

A court decision that has just been received from London reversing a decision of the Supreme Court of Canada on a papermaking appliance is hailed with considerable pleasure here as it may result in a much more favorable attitude in the future of Canadian Courts towards patents. The decision in question related to Pope Appliance Corp., of Boston, Canadian patent 192,726, for threading paper through the calenders automatically by means of doctors and air blasts. This is the device which is used on all or nearly all fast running paper machines, most of which are licensed by the Pope Appliance Corporation, owner of the patents making up the Pope System.

Suit was brought in the Exchequer Court of Canada against the Spanish River Pulp & Paper Co., for infringement by it of the calender threading patent No. 192,726 and also the opposed air jet patent No. 186,500. At the trial in the Exchequer Court before Judge Maclean, the defendant admitted the validity of patent No. 186,500 and infringement and judgment was rendered for an injunction and an account, but the defendant contested the validity of the calender threading patent and the court held the invention was not patentable in view of various prior patents. The Supreme Court of Canada sustained this view. The Judicial Committee of the Privy Council at London, however, granted leave to appeal and the case was heard before the Lord Chancellor, and Lords Dunedin, Sumner, Darling and Atkin, who have just advised that the decree of the Supreme Court of Canada be reversed with instruction to enter judgment against the Spanish River Pulp & Paper Co., for an injunction and an accounting for damages and costs.

The opinion of the council has necessarily involved a decision that under the Canadian patent Act of 1906, a patent is not rendered invalid by reason of public use with the consent of the inventor outside of Canada, after the date of his invention but more than one year before the application for a patent in Canada. This overrules certain lower court decisions,

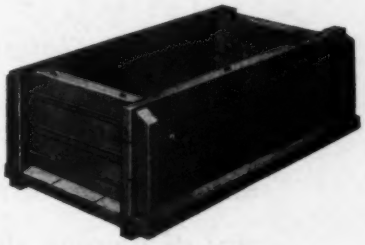
It is understood that the Privy Council gave great weight to the fact that the Pope invention replaced operation by hand in newsprint mills, which had led to such frequent accidents that machine tenders were usually short one or more finger joints. The fact that the invention immediately went into use throughout the newsprint industry and all fast running paper machines in North America was regarded as weighty evidence. Guy Cunningham of Fish, Richardson & Neave, Boston, counsel for the Pope Appliance Corp., wes advisory to the British and Canadian counsel. J. Whitehead, a leading British patent barrister, represented the Boston company at the argument before the Privy Council. Russel S. Smart, of Ottawa, was also advisory for the local company. The defendants were represented by A. W. Anglin and Christopher C. Robinson of Canada.

Two Prominent Paper Houses Merge

The announcement of the consolidation of Carter Rice & Co., Corp., and the Charles A. Esty Paper Co., was of paramount interest to the paper trade of Boston and to the manufacturing trade of the country as both are outstanding in their field.

Carter Rice & Co., Corp., admittedly one of the largest distributors of paper in the country with offices in Seattle, San Francisco and other Pacific Coast cities, are one of the largest wholesale distributors in New England. Charles A. Esty Paper Co., with offices and warehouse in Boston and Worcester, Mass., and offices in Springfield, Mass., have shown a remarkable growth under the brilliant management of Charles A. Esty, who has developed a business in the Boston division devoted largely to very high grade papers. Recognition of his administrative ability is seen in the merger, for he is to become managing director of Carter Rice & Co. It is understood that the Worcester branch will be continued

WOOD TANKS



We are equipped to build any kind of a wood tank. Specializing in Cypress and Redwood, we also make a great many tanks of Western Fir, Cedar, Eastern White Pine, Oak, Long Leaf Yellow Pine and other woods. Every Stearns Tank is manufactured in our own modern tank factory by experienced men.

A Stearns Tank is a Long Life Tank because it is built of the right kind of wood for the specific use it is to be put to.

Let our engineering department help you.

The A. T. Stearns Lumber Co.
NEPONSET, BOSTON, MASS.
STEARNS TANKS

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

REPUTATION
SERVICE
QUALITY

Are the Three PRINCIPAL Factors Which Have Placed

LOCKPORT TENAX FELTS

IN THE LEAD IN THE FELT INDUSTRY OF THE WORLD

We could comment about technical manufacturing operations, stating WHY—LOCKPORT TENAX FELTS excel all others, but, without a practical demonstration it would not mean a thing to the PAPERMAKER. Results—Count.

LOCKPORT TENAX FELTS DO EXCEL.

REPUTATION—*Built up on 37 years fair dealings*

SERVICE—*Which means attention in every detail*

QUALITY—*Which cannot be equaled in any respect*

LOCKPORT FELT CO.

NEWFANE, NEW YORK

as well as the Springfield office and the Boston division for the present.

The officers of the company, which will retain the name of Carter Rice & Co., Corp., are: Hubert L. Carter, president; Winthrop L. Carter, vice-president; F. C. Kennedy, treasurer; Charles A. Esty, managing director. L. W. Angell continues as secretary and the board of directors will be composed of George H. Lowe, chairman, Edward D. Bement (at present manager of the Esty Boston office), Eliot H. Carter, and Wm. H. Dunbar.

Strathmore Takes Over Rising

The transfer in ownership of the B. D. Rising Paper Co., Housatonic, Mass.. to officers and stockholders of the Strathmore Paper Co., Mittineague, which places the latter company in a position of control, has received general mention and discussion. It is of interest to note that papers of incorporation have been filed at the State House, Boston, and that the total capitalization is $1,199,000, of which $100,000 is employees' stock, $724,000 is preferred and $375,000 common stock. Walter J. Raybold continues as president of the Rising Paper Co., as it is now to be known, Benjamin A. Franklin becomes first vice-president, F. Nelson Bridgham. of Springfield, is second vice-president, Horace A. Moses is treasurer and George E. Williamson is assistant treasurer. The management insofar as superintendents, foremen, sales agents and distributors are concerned will remain unchanged and the general line of papers now made will be continued it is reported.

The Bureau of Labor Industries, Commonwealth of Massachusetts, reporting for the value of the principal manufactured products in the city of Holyoke states that the paper industry is still by all odds in the lead and citing figures to prove this shows that the value of paper produced in the fiscal year was $22,594,000, to which can be added nearly $5,000,000 of stationery and $4,355,000 of other paper goods such as blank books, pads, etc. The strictly paper mills of Holyoke used raw materials valued at 12½ millions for the past year and paid about $4,200,000 in wages, employing an average of 3,536 men and women. Here is a significant fact indicative of the higher level of wages in the paper industry; the woolen and worsted industry of Holyoke with 3.264 employees paid but $3,868,000 in wages, over $300,000 less for more employees.

George W. Wheelwright Paper Co., of Leominster, Mass., has stocked its agents with samples and data on a new cover paper which was developed as a progressive feature following the adoption of seven attractive colors for Best Plate Finish. The new cover is known as "Corinthian" and will complement the colors of B. P. F., having similar shades. Aggressive and able advertising of its products through merchant co-operation has been the result of the campaign undertaken during the past six months by W. W. Walter, sales research and promotion manager.

A. W. P. to Build Spur Track

After completing a new power plant at the Beebe & Holbrook division, a plant that is estimated to have cost around $90,000, the American Writing Paper Company, Holyoke, has embarked on a new piece of expansion in connection with this division and the Wauregan division, which embraces a spur track to cost about $40,000 including a bridge across the canal which it is anticipated will save a large sum in trucking expense. It will connect with the second level canal line of the Boston & Maine R. R.

Both Beebe & Holbrook and Wauregan divisions are operating at capacity. The power plant at the first named division burns powdered coal and was installed by the Combustion Engineering Corp.

New England Paper & Pulp Traffic Association, along with other protestants, has agreed to a compromise coal rate scale made up by the Boston & Maine R. R. after its first proposal

Felt Cleanliness

THE **Cleanliness** of your **Felts** is an important part of your paper making. Dirty felts give you trouble and greatly increase your cost by necessitating frequent shut-downs for felt changes and washing.

A **Felt Washer** which will clean the felt while it is running will greatly increase the efficiency of your plant. The Lansing Felt Washer will do that.

The **Felt** will be **kept soft.**

The **Life** of the **Felt** will be **Increased.**

The **Quality** of the **Sheet** will be **improved.**

Greater Production will result as the necessity of shutting down for felt washing will be practically eliminated.

The washing is done in nature's own way, with plain water.

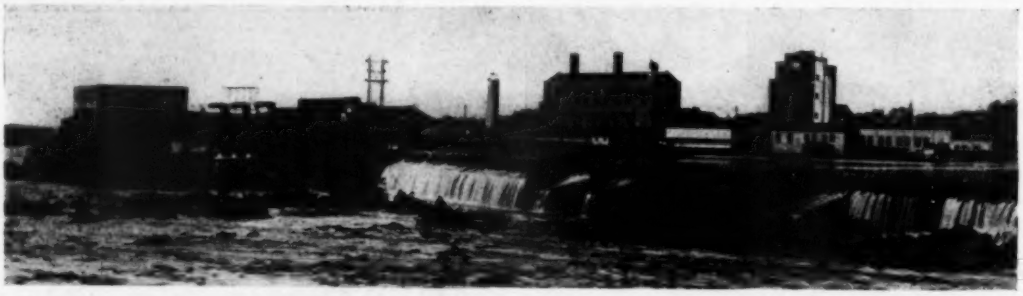
Representative mills all over the country are now using this washer with satisfactory results.

May we tell you more about it?

GILBERT J. SCOFIELD COMPANY, INC.

683 Broadway

ALBANY, N. Y.



Consolidated Water Power & Paper Company

Wisconsin Rapids, Wisconsin

At the Wisconsin Rapids plant of the Consolidated Water Power & Paper Company, three Foster economizers and air heaters are operating in connection with three 819 hp. Springfield boilers. The boilers are designed for a working pressure of 450 lb. per sq. in.

Hot gases from the boiler pass up vertically through the economizer into the air preheater. The first pass in the air heater is upward and the second is downward. A forced draft fan moves the air through the air heater to the furnace.

This Foster Wheeler equipment has the capacity to raise the feed water temperature to 284 deg. F. and preheat the air to a temperature of 298 deg. F.

FOSTER WHEELER CORPORATION
165 Broadway, New York, N. Y.

Branches in Principal Cities

Foreign Associates:
Foster Wheeler Limited; London, England.
Foster Wheeler Limited; Toronto-Montreal-Vancouver, Can.

FOSTER WHEELER

Genuine Bristol's Charts Are Accurate

—and the high standard performance of Bristol's Instruments can be guaranteed . . . only when they are used

TO IDENTIFY them, every Bristol's Round Chart is printed on paper having water mark reading "BRISTOL'S"; and the name of The Bristol Company printed in the center: Strip Charts having The Bristol Company; chart number; etc., printed on the side.

Use Only Charts Specified It is also well to bear in mind the fact that every Bristol's Recording Instrument is calibrated to be used with particular chart specified as most suitable for the application in hand. This makes it necessary that charts used for such application be identical without the slightest variation in order to assure continuous accuracy.

To Insure Accuracy Close attention is given to the finest details in all matters pertaining to the design and printing of Bristol's Charts. The printing is done from extremely accurate engravings, and under constantly uniform humidity conditions in our own plant at Waterbury, Connecticut. Even the paper from which various types of charts are made is specially processed for the purpose—the quality of paper being such as to provide clear records, correct ink absorption, etc., under all operating conditions.

Low Cost And in addition, Bristol's charts are, in almost every instance, procurable at a remarkably low cost. In fact, it is generally conceded that chart replacement costs with Bristol's Instruments are so small as to be really inconsiderable.

BRISTOL'S RECORDING
Chart
PRESSURE GAUGE
Round charts come in packs of 100.
This watermark on every genuine Bristol's Chart
Strip chart instruments furnished with 50-foot chart roll.

All of which should lead those responsible for maintenance of accurate instrument service to safeguard their own interests by using only the genuine Bristol's charts.

The Bristol Company, Waterbury, Conn.

had been so aggressively fought before Examiner Carter of the I. C. C. at Boston. The new scale provides for a distance tariff, starting at 70c per ton for five miles, $1 for 20 miles, $1.35 for 50 miles and progressive five cent per ton increases for each five miles thereafter.

Boston Paper Trade Meets

The usual good time was enjoyed at the informal dinner of the Boston Paper Trade Association which was held at the Exchange Club on the evening of November 21st. President Hubert L. Carter presided over the short business session at which the following were elected to membership: Courtlandt B. Griffin, Carew Mfg. Co., South Hadley Falls; Paul F. Moore, Westfield River Paper Co.; Alden W. Howard, Howard Paper Co., Boston; Roger B. Taft, Hammermill Paper Co. The new limited membership gained three additional names in the persons of Fred B. Korbel of the U. S. Envelope Co., A. P. Mitchell of the Warren Mfg. Co., and Richard H. Campbell of Linton Bros. & Co., Fitchburg.

Addresses were made by Dr. Rollo Water Brown, author and professor, on the "Creative Spirit and Business." E. W. Cunningham of the Boston Post, a former all America football star at Dartmouth, discussed "Football."

It is understood that one of the most interesting new fourdrinier machines is to be installed at the mills of the Crocker Burbank Co., Fitchburg, Mass. The machine is the product of Beloit and has special features which apparently have not been divulged by the manufacturers.

Despite the fact that the mills for the most part continue to support the 1,000 count as a basis for weight in quoting on bond, book and ledger papers, a prominent Boston distributor, John Carter & Co., has come to the conclusion that the ream is desired by the printers of New England and with the issuance of its December Red Book catalogue, has formally announced its return to the ream basis throughout and 100 sheets as basis for cardboard. The latter count is also generally adopted by the other Boston merchants.

A record of which the Building and Roofing division of Bird & Son Inc., of East Walpole, Mass., is entitled to be proud has been set up during the past year when that division employing 225 men completed an entire year without a single lost time accident. The division involves some of the most hazardous work in the company. Credit for the record is placed on the efficient plant safety committee and the cooperation of the workers.

Refuse to Modify Pulp Rate

The New England Freight Association, after giving consideration to evidence presented against an advance in woodpulp rates from Brunswick and points east to points in New York State trunk line territory has approved the proposed increase.

Evidence was presented against the advance by the Penobscot Chemical Fibre Co., of Great Works, Me., and the New England Paper & Pulp Traffic Association. The new rate is to apply on shipments of woodpulp in bales, bundles or rolls carloads, from Brunswick and points beyond where no through rates apply, at 27c per 100 pounds to Ballston Spa, Niagara Falls, Black Rock, Buffalo, Cohoes, Hoffmans, Martisco, Waterford, Buffalo, Watertown and Suspension Bridge, N. Y.

The New England Paper & Pulp Traffic Ass'n is preparing data anticipatory to asking a suspension of the advance.

Some changes have been effected recently in the supervision of the Groveton Paper Company's mills at Groveton, N. H. S. W. Shannon, formerly associated with the Eastern Manufacturing Company, Bangor, Maine, and recently superintendent of the Munising Paper Company, Munising, Mich., is now superintendent of the mills, having assumed his new duties on November 1. H. J. Reimer, well known papermaker

A total of 268 Warren

62
91
43
40
32
268

Pumps purchased by 5 paper mills *all within four years*

Records tell the story! Each of these five paper mills originally purchased one or two Warren Pumps. As a result of their performance under actual conditions, their sustained high efficiences and low cost of operation, repeat orders were placed until one of the paper mills now has 91 in service, another 62, and the others 43, 40 and 32.

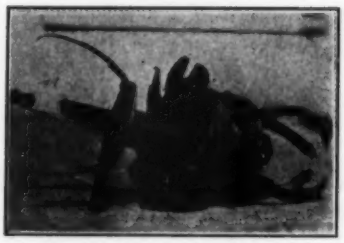
Warren pumps are built to live up to the claims made for them. Compare them part for part in design and construction with any other pumps. No effort has been spared to build them to deliver to the user the lowest possible pumping cost per year. Centrifugal and reciprocating types for every purpose. Write for Bulletins.

Warren
Steam Pump Company Inc.
Warren Massachusetts

Atlanta Boston Charlotte Cleveland Dallas Kansas City St. Paul New Orleans New York Oklahoma City Philadelphia Pittsburgh San Francisco Toronto Scranton Seattle St. Louis

2368

Removes Slime from Pipe Lines—MECHANICALLY



GO DEVIL

Eliminate costly chemical methods of removing slime from pipe lines. The Hayton Go-Devil does the job **mechanically** in less time and with less trouble.

The Hayton Go-Devil is equipped with a row of hardened steel scrapers or blades arranged in propeller shape to fit the pipe. As the Go-Devil moves through the pipe, impelled by the water behind it, the blades scrape the slime off the walls. Steel guides keep it in alignment. The bends are taken with ease by means of a strong flexible spring.

Just drop us a card and we'll send further details without obligation to you.

HAYTON PUMP AND BLOWER COMPANY
APPLETON, WISCONSIN

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY ST. BOSTON, MASS.

Sole Selling Agents

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

FOR ALL PAPERS—
A Fitchburg Felt

¶ For whatever paper you make, whether fine ledger or bond, book or coarse paper, Fitchburg Felts give long and efficient service.

¶ Fitchburg Cotton Dryer Felts are made in two, three, four, five and six ply in English weave, from 60 to 288 inches in width.

¶ *When next thinking of dryer felts, think of "Fitchburg."*

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
Automatic Board Scales
Automatic Tissue Scales
Automatic Paper Scales
Automatic Felt Scales
Electric Board and Paper Testers (Automatic)

E. J. CADY & COMPANY
549 W. Washington Blvd., Chicago, Ill.

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

and color expert, has been placed in charge of beaters and coloring. These two expert papermakers, working with E. J. McDonnell, the general manager of the Groveton plant, give to this company prospects of a very successful future.

Levi S. Nold, treasurer of the American Writing Paper Co., Holyoke, Mass., died suddenly at the Brighton Hotel, Atlantic City, N. J., November 23, 1928, in the sixty-fourth year of his age. Mr. Nold was a native of Youngstown, Ohio. The widow and two daughters survive.

In connection with the Strathmore Paper Company's acquisition of B. D. Rising Paper Co., it is announced that Old Colony Envelope Co., Westfield, manufacturers special envelopes for the Rising Paper Company in the past, the stock for which has been manufactured by Rising, will expand in connection with a contract to manufacture envelopes to match the Strathmore lines. It is understood to be definitely denied that Strathmore will acquire control of Old Colony.

Veteran Superintendents Retire

Charles M. Nelson for forty-five years connected with the industry, thirty years as superintendent, has retired from the Carew Manufacturing Co., South Hadley Falls, Mass. Mr. Nelson was born in Denmark and served as superintendent for Worthy Paper Co., assistant superintendent of the Massasoit division of the American Writing Paper Co., for ten years chief of this mill and the Bee & Holbrook division, and for three years superintendent at Neenah, Wis., coming to the Carew Company in 1923, where he has since been superintendent.

Another veteran superintendent retiring this month is Fred A. Verrill, for fifty years with S. D. Warren Co., and since 1908 chief of the coating mills.

The Rogers Paper Mfg. Co., of South Manchester, Conn., has purchased the plant and equipment of the A. Willard Case Co., of Manchester, which formerly manufactured a similar line of press board and transformer board. The Rogers company has taken immediate possession and will develop new products in this plant.

Specialty Sales Inc., of Holyoke, has been chartered in Massachussetts to deal in and manufacture paper and paper products with a capital stock of $50,000. Wm. P. McCorkindale, well-known to the paper trade of Holyoke, is president of the new company and H. F. Freeman of Holyoke is treasurer.

It is understood in Boston that the cut in price on chip and filled newsboard instigated by the leading eastern manufacturers has been rescinded as of December 1st. In fact, for a week prior to that several leading mills would accept no more orders at $30 and $32.50 and others were formally quoting $40 and $42.50, although demand had disappeared as most box factories had covered during the week of heavy sales at the $12 reduction.

The New England Paper & Pulp Traffic Association is seeking reparation on shipments of rock salt from points in New York state to mills in Maine.

George Veeiman of J. G. Veeiman & Zonen, leading paper stock exporters of Amsterdam, Holland, was visiting the paper mills of New England during the past month.

Fred Thomas, a well known paper board salesman connected with the Robert Gair & Co., Boston offices, died during the past month after a short illness. Mr. Thomas had been connected with the Gair organization and its predecessor, the Haverhill Boxboard Co., during most of his business career. He was 54 years of age.

Henry C. Avery, formerly vice president of the American Tissue Mills of Holyoke, has been named vice president of the Flintkote Co.

Paganini kept on playing!

AFTER three strings of his violin had broken, Paganini still held his audience in awe—so great was his skill with the remaining string.

Many a machine tender has wished that he could produce flawless paper despite a broken Fourdrinier wire, but the Paganinis of paper making are the men whose experience has taught them to select wires which will not fail them—wires which will give the longest service without repairs or replacement.

Tyler Fourdrinier Wires are selected because of their proven durability and dependability.

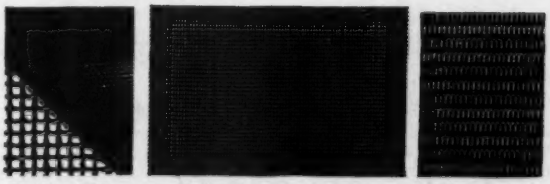
Tyler Wire is drawn from special composition rods, specially treated to assure toughness and resiliency. It is woven on Tyler-designed looms made in our own shops and embodying more than a half century of wire-weaving experience.

Tyler Wires run straight and true. They produce uniform and flawless paper. Send for samples.

Supplied in all widths up to and including 234 inches

***The* W. S. TYLER COMPANY**
Cleveland, O.

TYLER WIRES



Backing Wire | Tyler Fourdrinier Wire | Corduroy Cloth

WE OFFER FOR SALE

Fourdrinier Paper Machines trimming 152", 69" and 60"; Cylinder Paper Machines, 72" and 42" trim. All excellent machines. Second hand Kidder and Cameron Slitters, Single & Duplex Rotary Sheet Cutters, No. 4 Nash Vacuum Pumps, Variety of Jordans—Noble & Wood, Horne, Emerson, etc.; several stacks of supercalenders, 40" to 90" wide; variable speed engines; 55" to 65" Power Paper Cutters, rebuilt. Let us know your requirements.

GIBBS-BROWER COMPANY, Inc.

Paper and Pulp Mill Brokers

261 Broadway, New York City

Telephone—Barclay 8020

OUR MOTTO—"Service First".

BETTER SERVICE

on

Hard maple and gum wood press rolls
Brass tube rolls
Bronze couch and breast rolls
Brass, Iron and Wood felt rolls
Copper covered felt rolls
Brass covered felt rolls
White wood felt rolls
Iron cores for rubber covered press and felt rolls
Bronze suction box covers
Hercules car movers

All rolls balanced

We would be very glad to submit information and quotations on all products. Just drop us a card.

J. W. Hewitt Machine Company

Paper Mill Machinery

Neenah Wisconsin

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

Wanted—at once an A1 experienced back tender for board mill, with excellent opportunity for advancement. Mill located in Northern Wisconsin. Address Box 146, The Paper Industry.

FOR SALE—Two beaters of one ton each capacity, Noble & Wood make. Have been used very little. Apply Barber Leather Co., North Adams, Mass.

Paper Mill Machinery

1—Rice Barton & Fales Fourdrinier with two presses 24 dryers 48x94", two calenders
1—Fourdrinier with two presses, 19 dryers, 36x84"
1— 84" Clark Cutter with Moore & White Layboy
2— 90" Holyoke Super Calenders motor drive
1— 72" Holyoke Super Calender motor drive
3— 66" Holyoke Super Calenders belt drive
1—154" Warren two drum winder with slitter
1—149" Beloit two drum winder with slitter
1—130" Moore & White four drum winder with slitter
1—129" Pusey & Jones two drum winder with slitter
1—127" Warren two drum winder with slitter
1—112" Moore & White four drum winder with slitter
1— 84" Beloit two drum winder with slitter
1— 60" Kidder two drum winder with slitter
1— 77", 60", 52" Hamblet Sheet Cutters.
1— 70", 56", 54" Moore & White Sheet Cutters
1— 14x16" Ball Twin Variable Speed Engine

FRANK H. DAVIS COMPANY

175 Richdale Ave. CAMBRIDGE, MASS.

Cleanliness

Belting should be cleaned every so often. Its porous nature absorbs moisture which includes many fine particles of dirt and dust.

After the belting has been cleaned a small application of a good belt dressing should be used. STEPHENSON BAR BELT DRESSING, Red Label for Leather and Green Label for Rubber and Canvas belting has been on the market now for over forty years. We will be glad to send you a sample of either or both brands on request.

Stephenson Manufacturing Co.

Albany, N. Y.

PACIFIC COAST NEWS

WASHINGTON

Announcement was made last month of the sale of 100,000 shares of Rainier Pulp and Paper Company Class A. common stock, the sale having been made before public announcement was made. The purpose of the sale was to retire present outstanding securities by redemption or exchange. In addition, 123,000 shares of Class B., no par value capital stock was sold. This sale is a verification of a rumor current in October.

The Grays Harbor Pulp and Paper Co., Hoquaim, Wash., was recently granted a franchise by the Grays Harbor county commissioners permitting it to extend its pipe line in the East Hoquiam valley for approximately one mile, part of which is on the Hoquiam-Wishkah road.

Arrival of Vern Murchie, who will superintend the Union Bag company's plant at Vancouver, Wash., was announced on November 24. Mr. Murchie has been transferred from the company's plant at Bogalusa, La., and has brought his family with him to Vancouver. Machinery is now being installed in the plant which will be ready for operation about the first of January with a capacity of 3,000,000 bags daily. The plant, which is costing about $70,000, unequipped, will employ approximately 100 men and women.

The Palouse Pulp and Paper Company, with a capital stock of $300,000 was incorporated recently in the state of Washington with H. D. Wagnon at the head. Mr. Wagnon who started the Sacramento Pulp and Paper Company at Sacramento, Cal., is attempting to interest Eastern Washington and Eastern Oregon wheat farmers in using straw for the manufacture of paper. This was the material which was to have been used by the Sacramento company which has not functioned to date.

A chipping plant equipped to handle 300 cords of wood a day, and operating with a Diesel engine, is to be built on Neah Bay, according to a recent announcement. Chipping has been done at this point heretofore, but the new plant will enlarge facilities to supply both the Washington Pulp and Paper Company at Port Angeles and the new National Paper Products Company mill at Port Townsend.

The Fibreboard Products Company of Port Angeles, has begun the construction of a wharf and warehouse. The wharf is to have a frontage of 380 feet and an open dock of 130x28 feet. The warehouse will cover an area of 28x150 feet.

The pouring of concrete for the new paper mill of the Grays Harbor Pulp and Paper Co. at Hoquiam, was scheduled to begin this month, the pile driving having been done during November. This mill will utilize the output of the Grays Harbor Pulp mill recently set in operation.

The Schaffer Box Co., Tacoma, which recently began the operation of its pulp mill has appointed A. R. Shirley superintendent. Mr. Shirley is experienced in producing sulphite pulp, having recently been with the Pacific Mills, Ltd., at Ocean Falls, B. C. The night superintendent is Walter Clifford, formerly with the Crown Willamette Co., and R. H. Pangborn is in charge of wood preparation. Ralph Schaffer is president of the company, F. C. Brewer, vice president and treasurer, and E. A. Glueck, secretary.

J. W. Wilt, Tacoma, has been engaged as expert pulp engineer in charge of manufacturing for the new Sitka Spruce Pulp and Paper Co. mill being built at Empire, Ore.

It is reported the Washington Pulp and Paper Corporation, Port Angeles, Wash., will build a power plant and pulpwood

Superintendents' Association to Make Survey

A complete survey of all of the pulp and paper mills in the United States is to be undertaken to ascertain just what new equipment has been installed in each mill during the last year and to learn of the results produced by this new equipment. The survey will also include additions or improvements to old equipment.

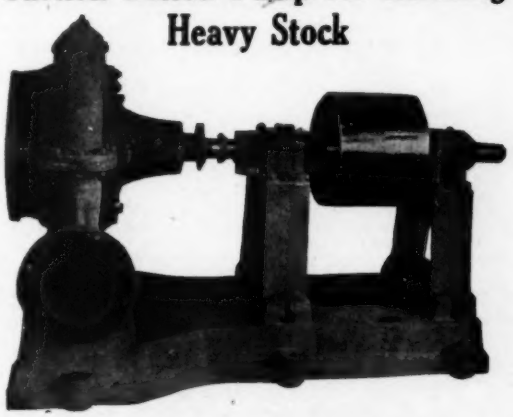
This work will be carried on by the newly formed Superintendents' Mill Service Committee of the American Pulp & Paper Mill Superintendents' Association, which was organized December 1 at the Hotel Commodore, New York City.

This meeting, which was continued Sunday, December 2, was attended by K. E. Terry, S. D. Warren Co., Cumberland Mills, Me., Chairman; Dr. C. A. Brautlecht, Head of the School of Chemical Engineering, University of Maine; John Schumaker, Champion Fibre Co., Canton, N. C.; Fred. J. Rooney, Mill Manager, The Upson Company, Lockport, N. Y.; National Secretary R. L. Eminger, of Miamisburg, Ohio, and National President B. T. Larrabee, ex officio, of S. D. Warren Co., Cumberland Mills, Me.

It is the plan of the committee to correlate the statements contributed by superintendents of pulp and paper mills throughout the country and then redistribute them to the entire membership of the Superintendents' Association in the form of an annual report, which it is felt will keep not only the superintendents but the entire industry informed on current improvements and developments in pulp and paper manufacture in a manner that will render unnecessary similar and less comprehensive surveys by individual companies.

Stebbins Engineering & Mfg. Co.
Chemical Pulp Mill Engineers
WATERTOWN, N. Y.
Digester, Acid Proof and other Guaranteed Linings.
Chemipulp Cooking and Recovery Process.

8" Horizontally Split Casing Single Suction Belted Pump for Handling Heavy Stock



Built in sizes ranging from 2" to 18". 42 years designing and building centrifugal pumps for all conditions and service. Our engineering staff is ever at your service.
Please submit your specifications.

LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

V. D. SIMONS

Industrial Engineer

PULP AND PAPER MILLS, HYDRO-ELECTRIC AND STEAM POWER PLANTS
ELECTRIFICATION PAPER MILL PROPERTIES

435 NORTH MICHIGAN AVE.
TRIBUNE TOWER
CHICAGO

FERGUSON ENGINEERS

JOHN F. FERGUSON

Complete Pulp & Paper Mills. Investigation of New Enterprises. Special Heat & Power Applications. Hydro-Electric Developments. Steam-Electric Power Systems. Sectionalized Paper Machine Drives.

Analysis, Design, Construction, Operation Efficiency

Holyoke, Mass. Monadnock Bldg., CHICAGO, ILL.

H. S. TAYLOR, Consulting Engineer

Member Am. Soc. C. E.—Member Am. Soc. M. E.
Member Eng. Inst. Can.—Member A. I. E. E.

PULP, PAPER AND FIBRE MILLS
HYDRO-ELECTRIC AND STEAM POWER PLANTS
PLANS—SPECIFICATIONS—EVALUATIONS—REPORTS
CONSULTATIONS

Jefferson St. Arcade, Dayton, O., Guarantee Bldg., Montreal, P. Q.

HARDY S. FERGUSON

CONSULTING ENGINEER

200 FIFTH AVENUE NEW YORK CITY

Member Am. Soc. C. E.
Member Am. Soc. M. E.
Member Eng. Inst. Can.

PAPER, PULP AND FIBRE MILLS
INCLUDING BUILDINGS AND COMPLETE MECHANICAL EQUIPMENT
WATER POWER DEVELOPMENT
DAMS, STORAGE RESERVOIRS AND OTHER HYDRAULIC STRUCTURES
STEAM PLANTS

Examinations
Reports
Estimates of Cost
Designs
Specifications
Valuations

KARL A. LEFREN

Consulting Engineer

Member A. S. M. E.

171 Madison Ave., New York City

INDUSTRIAL POWER REPORTS
PAPER AND BOARD MILLS DESIGNS
MILL CONSTRUCTION CONSTRUCTION

GEORGE F. HARDY

M. AM. SOC. C. E.
M. AM. SOC. M. E.
M. ENG. INST. CAN.

Mill Architect and Consulting Engineer

Langdon Building

305-309 Broadway, New York

SPECIALTY:

Paper, Pulp and Fibre Mills
Water Power Development
Steam Power Plants
Plans and Specifications
Valuations, Reports
Consultation

Cable Address:
"Hardistock"
A. B. C. 5th Edition
Bedford McNeill
Western Union
Bentley's

James L. Carey

Paper Mill Architect and Engineer

208 N. Laramie Ave.,

Cable Address: ASCAR, Chicago — Chicago — Codes ABC 5th Western Union

D. Manson Sutherland, Jr.

Consulting Chemical Engineer

Special Fibre Products and Processes
Homogeneous Boards
Waterproofing Compositions
Broad Street Bank Building
TRENTON, N. J.

Purification of Effluents
Forming and Drying Machines
Utilization of Waste Fibres
New York Office:
341 Madison Ave.

Pulp and Paper Mills, Power Plants, Chemical Plants

Engineering Design
Construction Supervision
Mechanical Equipment
Surveys
Investigations

Management
Process Development
Waste Utilization
Fuel Economy
Valuations

Arthur D. Little, Inc.

Chemists : Engineers : Managers

30 CHARLES RIVER ROAD CAMBRIDGE, MASS.

POWER PLANTS

Complete Service
Design
Construction

RUST RUST

THE RUST ENGINEERING CO.

PITTSBURGH, PA.

chipping mill at Neah Bay, Wash., 67 miles west of Port Angeles, which will give year around employment to 400 men.

OREGON

H. P. Coolidge, assistant mill manager of the Camas division of the Crown-Willamette Paper Co., has joined the paper mill engineering staff of V. D. Simons of Chicago. He was also with the company in the West Linn, Ore., and the Floriston, Calif., plants.

Paper Mills Requested to Mark Roofs

This industry has been asked to co-operate with The Daniel Guggenheim Fund for the Promotion of Aeronautics in a nation-wide campaign for roof-markings which will identify the country's towns to the aviator. Such identification is a first requisite for an air transportation system, which will heighten the efficiency of American business by swifter means of communication.

In asking that industrial corporations should assist in roof-marking their buildings, where practical, Harry F. Guggenheim states, "Sign posts of this kind for the airplane are an absolutely essential item in the safety of air transportation. The need for them has been repeatedly stressed to the Fund by Colonel Charles A. Lindbergh as a result of his experience during his United States tour a year ago, and in subsequent cross-country flying. In the opinion of Colonel Lindbergh, who is a technical adviser to the Fund, this identification represents one of the most worth while steps that can be taken for the advancement of civil aviation. His opinion is shared by other pilots from coast to coast and has the emphatic endorsement of all those interested in aeronautics."

As a basis for the work, the Fund, supported by the Postmaster General, has asked some 8,000 postmasters in towns with a population between 1,000 and 50,000 to take the initiative in seeing that their communities are identified by roof-markings. The postmaster is urged to enlist the support of civic organizations such as the American Legion, the service clubs, or the Chamber of Commerce, or individual corporations. To the organization or person responsible for the identification the Fund has asked Colonel Lindbergh to send a certificate of appreciation. The record of roof-markings will be kept by the Fund and made available to the Department of Commerce, the Post Office Department and other government agencies. The movement has the backing of the Departments of War, Navy and Commerce.

Many corporations throughout the country, a number of them in this industry, have already been active in marking the roofs of their own buildings for purposes of aerial navigation. This is not only a civic act helpful to the community in which the corporation is located; it is also of direct benefit to business as a whole, since it is the latter which will benefit particularly from a commercial air transportation system. The Fund asks that a corporation with an available room in an unmarked town of between 1,000 and 50,000 population should communicate directly with the postmaster.

In a printed bulletin the Fund describes the type of roof most suitable for markings and urges the use of block letters in chrome yellow with a black background. It is suggested that it should be from 10 to 20 feet in height and on roofs preferably of tiled shingles, tin or other metal, or slate where the visibility is not reduced by smoke. Besides the name of the town or city, the marking should include an arrow pointing due north with the letter "N" over it and a smaller letter indicating the airport if there is one.

R. D. Kehoe and David Brown, of the Technical Economist Corporation, acted as hosts to a group of Swedish and American pulp and papermakers at a dinner tendered on the evening of November 19 in the White Horse Tavern in New York City. Most of the Swedish engineers present have been studying American mill operations, and are returning to Sweden shortly. A feature of the gathering was the presentation of a multi-reel movie made by Mr. Kehoe, Herbert Nilsson, G. Magnusson and G. Asplund on their recent trip to the Pacific Coast and the South. The film featured woodlands and materials handling operations.

RHOADS TANNATE WATERSHED BELTS

CONSIDERABLY BETTER SERVICE

THIS is the report on two Rhoads 2-ply Tannate Watershed Belts that replaced 3-ply oak belts on beaters in a Minnesota paper mill.

The oak belts slipped at times enough to "burn", and wore out rapidly.

The Tannate Watershed Belts even when the beaters are loaded with heavy stock carry the loads steadily without appreciable slip.

The much longer life of Tannate Belts and their ability to transmit decidedly more horsepower without slipping make them "considerably better" for paper mill service than most other makes of belting.

They are always sold under the Rhoads service guarantee. This leaves you to be the judge of whether your purchase is profitable. On this basis may we send you a Rhoads Tannate Watershed Belt for one of your hard drives?—Or would you like one of our men to call?

J. E. RHOADS & SONS

PHILADELPHIA .....47 N. Sixth St.
NEW YORK .....112 Beekman St.
CHICAGO .....34 N. Clinton St.
ATLANTA .....80 Forsyth St. S. W.
CLEVELAND .....1234 W. Ninth St.

Factory and Tannery, Wi'm'ngton, Del.

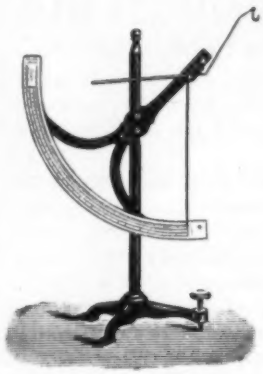
Freyn Engineering Co.

Consulting engineers
in the development of the new
boiler house and hydro-electro
plant of the Wausau Paper
Mills Co., Brokaw, Wisconsin

310 So. Michigan Ave. Chicago, Ill.

SCHOPPER

World Standard Paper Testers



All Kinds of Scales

Patented
Schopper-Riegler Beating Tester
Uniformity of beating means better paper.

The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.

Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.

Rapid Strength and Stretch Tester

FOREIGN PAPER MILLS, Inc.

Sole Agents

72 DUANE STREET, NEW YORK

Warehouses: NEW YORK—MONTREAL

Write for Booklet on Paper Testing Instruments No. I-100

Technical Developments in the Paper Industry

Domestic and Foreign

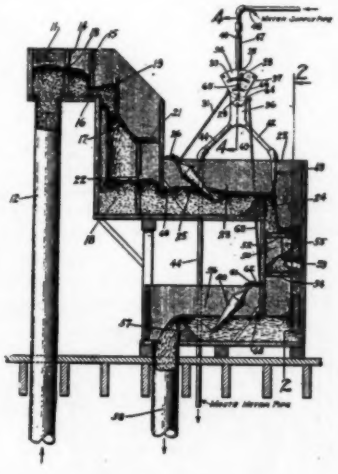
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Pulping Wood

THE wood chips are submerged in and heated with an aqueous solution of a normal sulphite and a salt of a weakly ionized polybasic acid. The temperature of the liquor is maintained at least at 100 degrees C. and not more than 125 degrees C. The chemical treating liquor is then removed and the woody material is thereafter heated to a higher temperature. F. G. Rawling, Knoxville, Tenn. United States Patent No. 1,673,089.

Stock Consistency Regulator

AN INTERESTING type of stock consistency regulator for papermaking machines is shown in the accompanying illustration. The stock flows through a chamber which is composed of various parts. Means are provided for maintaining the stock at constant level in its flow through the chamber. These are the wires shown at (15), (19), (22), (24), (57), etc. It is noted that the stock enters the regulator through the pipe (12). The two members (25) and (59) are in contact with the flowing stock and the position of these members is varied by changes in the consistency of the stock. These movable members control by means of the levers (31) and (63) the flow of water through the pipes (42) and (44) respectively. In this manner, the amount of water that enters the regulator to reduce the consistency of the stock to the required degree is regulated. M. de Zurik, Sartell, Minn. United States Patent No. 1,669,412.



Wire for Paper Machine

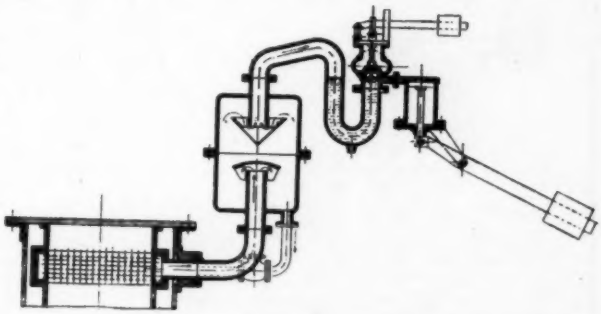
ONE of the essential conditions in the operation of the wire of the papermaking machine is to confine the pulp to a predetermined area on the wire. This is accomplished in a new way in United States Patent No. 1,679,523. The lateral spread of the pulp is controlled by impinging a fluid on the wire at the edge of this area. This patent is assigned by R. E. Heisel, Chillicothe, O. to Paper Machinery Co., Dayton, O.

Cyclic Process of Making Kraft Pulp

THE raw cellulosic material is digested in a liquor which contains sodium sulphide. The pulp is separated from the resulting spent liquor and the latter is concentrated and evaporated. The inorganic content of the liquor is smelted. The salts are then recovered in an aqueous solution for the digestion of other raw cellulosic material. Substantially all of the sodium and sulphur constituents present are recovered in the form of sublimed solids and sulphur dioxide is recovered in the products of combustion from the smelting operation by being absorbed in an alkaline aqueous liquor. G. A. Richter, Berlin, N. H., assignor, Brown Co. Berlin, N. H. United States Patent No. 1,689,534.

Mechanization of the Digester Operation

AS THE temperature within the digester rises to the maximum point, the pressure also increases to a point greater than the permissible maximum pressure. This condition is periodically alleviated by opening the relief valve at the top of the digester and allowing a certain amount of gas to escape. This has always been considered an unscientific method of regulation. A waste gas relief device which is claimed to be a very important improvement to the equipment of the digester and which acts as a safety device as well, is shown in the accompanying illustration. This device is



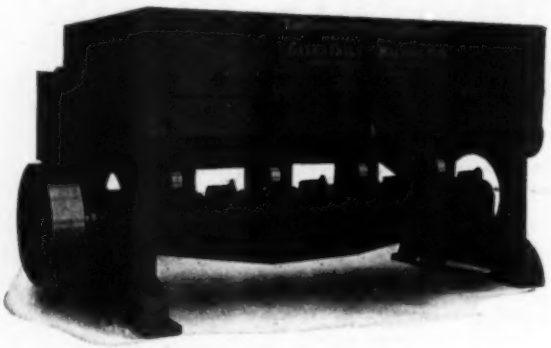
connected to the neck of the digester and consists of a separator, provided with a U bend, safety valves and oil cylinder. The device works in the following manner.

If the digester is full of liquor at the time the latter is being heated up, then the separator is also full of liquor. The liquid seal in the U bend (that is oil) prevents the penetration of the liquor to the safety valve. As the digestion proceeds, the level of the liquor sinks, and when the boiling temperature is exceeded, the upper part of the digester is filled with gases and vapors and the same is true of the separator. Hence, as soon as pressure is attained in the digester and likewise in the separator, which pressure is about one atmosphere under the maximum pressure, then the piston in the oil cylinder is lowered and the sealing liquid enters the cylinder. The safety valves are directly under the action of the gas pressure in the digester and they automatically relieve any pressure that is greater than the maximum admissible pressure.

Liquor is carried along by the outflowing gases and vapors, and this liquor would reach the safety valves and render them useless. The purpose of the separator is, accordingly, to separate this liquor from the gases and vapors, and this separated liquor is returned to the digester through a proper connection.

After the digestion is completed and the pressure is reduced to approximately one atmosphere below the maximum pressure, the sealing fluid is pushed out of the cylinder into the U bend.

The advantage of this arrangement lies in the fact that an absolutely certain safety arrangement is simultaneously



The

FANCHER

Patented

ROLLER SHOE FLAT SCREEN

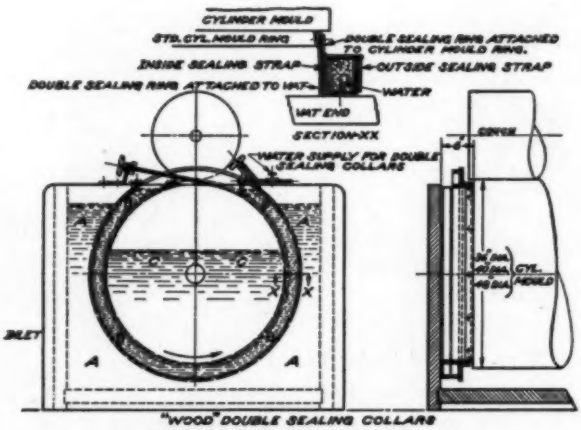
ANNOUNCING

The

A. D. WOOD

DOUBLE SEALING COLLAR

(Patent Applied For)



"WOOD" DOUBLE SEALING COLLARS
USED ON DECKERS, WET MACHINES, ETC.

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. Manufacturing Agent

E. K. Mansfield Co., 501 Fifth Ave., N. Y. C.
Eastern Representative

Western Representative
Woodbury & Wheeler Co., 55 Second St.,
Portland, Ore.

See pages 336 and 337 in the 1928 Paper and Pulp Mill Catalogue

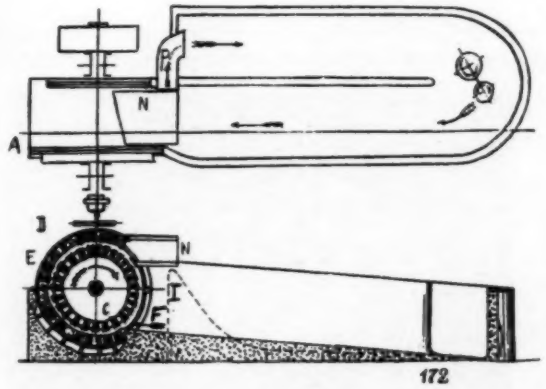
operated with the automatic pressure relief device. Leo Friedlaender, Der Papierfabrikant, 1928, pages 474-5.

Banana Plant Sap in Preparation of Pulp

CELLULOSE is obtained from vegetable products by treatment with the sap of the banana plant. The sap is obtained from freshly cut plants and may be diluted, and should be used fresh before any fermentation sets in. The vegetable products are left in the sap for some days until the fluid becomes gummy and sticky and the vegetable material becomes swollen. The cellulose is separated in some suitable manner, washed with acid, and bleached. Beating may precede bleaching. The waste liquor may be used as a fertilizer; or the substances contained therein may be separated. The process is suitable for the extraction of cellulose from bamboo, sugar cane or begasse, maize straw and stalks, straws of cereals in general, jute, linen, cahete or cana, tabua, reed, papyrus, banana fiber, stamens of palm leaves, woods of many kinds and grass of all kinds. F. G. P. Leao. British Patent No. 293,219.

Beater with Conical Beater Roll

THE beater, which is shown in the accompanying illustration, is provided with a conical beater roll. The stock is distributed uniformly over the surface of the beater roll knives. The conical roll (C) rotates in the hollow cone (D), in which are placed four to eight bedplates. These lie parallel to the axis of the roll which is placed at a certain angle with respect to the knives in the bedplate. The upper and lower pairs of bedplates are arranged in the same manner as in the ordinary beater, the bedplates that lie in between are separated from one another by a certain distance. Thus, the fibers which are collected between the bedplates are all directed in the same direction and the beating between the next pair of bedplates is effected in exactly the same manner.



The stock is caught by the knives on the beater roll at the point (F). The stock is beaten and finally reaches the closed box (N) on the same side at which it entered the roll. Then the stock passes through the channel (P) towards the other side of the beater trough and through its own weight it again reaches the beater roll.

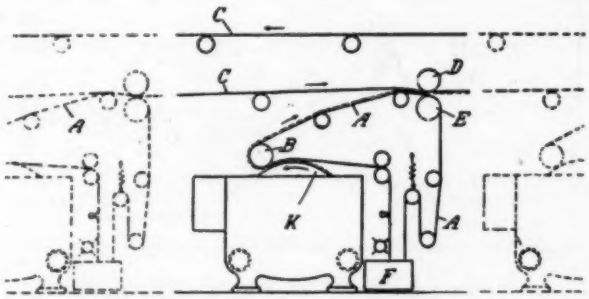
The advantages of this beater are as follows: The average diameter, the weight and the average circumferential speed of a conical beater roll is assumed to be equal to the diameter, the weight and the circumferential speed of an ordinary beater roll. It is assumed that there are two bedplates in the latter and six in the conical beater, with like number and length of knives in both beaters. The pressure of the beater knives against the bedplate is the same in each beater. Then the output and the consumption of power for beating for one and the same amount of stock are three times greater in the conical beater as in the ordinary beater, but the consumption of power for rotating a conical roll in the stock is less than for the rotation of three rolls in the ordinary beater. When it is taken into consideration that under more favorable conditions the consumption of power for the rotation of the lifted roll in the stock will be four to six times greater than for beating the stock between the bedplate and the beater knives, then the economy of the conical beater roll is evident.

The early investigations made to increase the output of the beater by increasing the size of the bedplate have not resulted in the adoption of this practice, for the reason that as the knives become worn, the roll had to be regulated, whereas the distance between the roll and the bedplate did not remain constant, and hence the beating surface of the bedplate was reduced. In the conical heater, as the knives become worn, the distance between the bedplate and the beater roll knives is maintained constant over the entire stretch by regulation of the drum in the housing by means of pressure screws. Russian Patents Nos. 18,758 and 19,874, G. Gasucha.

Cylinder Wire Cardboard Machine

THE invention, which is patented in German Patent No. 464,278, is an improvement on the cylinder wire board machine which is operated with a number of cylinder wires. Thus, the web of board after leaving the cylinder wire passes through a series of preliminary press rollers for removal of the water before it is carried over through the wet presses into the drying portion of the machine.

The new arrangement is shown in the accompanying illustration. The endless wet felt (A) is passed between the



cylinder wire and the couch roll (B), and then it meets the carrying belt (C) which runs over all the individual sections of the machine. It runs together with this belt between the pair of press rolls (D) and (E) and then passes upwards over a tension roller and through the felt washer (F) to the cylinder wire (K). A number of such individual machines are arranged in series so that various thicknesses and qualities of board can be manufactured.

The common endless belt (C) runs over the separate machines. This belt is provided on one side with a tension roller and is carried over at the end around two guide rollers, which yield the board web directly to the carrier belt of the wet rolls. All the upper press rolls (D) are driven by a common drive, while the lower rollers (E) are made in the form of press rolls with lever loading device.

The advantage of this arrangement lies in the efficient dehydration in the separate cylinder wire machines (K), for the paper web is well squeezed before it passes on. It must remain sufficiently wet in order to be properly combined into a single web by pressing between the pairs of rolls (D) and (E).

The new arrangement does away with the necessity of preliminary pressing (by means of moist rolls). Furthermore, in the manufacture of two and three ply boards, the inner webs do not pierce through the outer and thus produce a low grade product. Furthermore, all the individual cylinder wires may be arranged on one level and the passage of the webs can be watched throughout the machine, so that any correction may be applied at once. A. Purkert.

Wood Pulp

A PROCESS is described in German Patent No. 395,192 for the decomposition of wood in the form of chips, which consists in subjecting the wood to the action of a dilute solution of sodium hydroxide. The wood is then washed and thereafter further digested with the aid of a two to five

BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUT ATION

IN THE CONCENTRATION OF

SODA BLACK LIQUOR SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO
WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

ZAREMBA COMPANY
506 Crosby Bldg., Buffalo, N. Y.

New York City Office: 95 Liberty St.

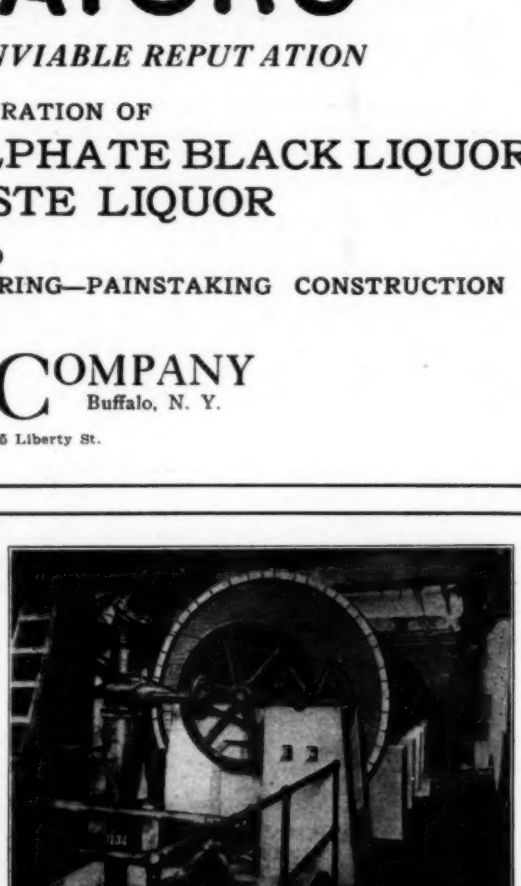
1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

per cent solution of nitric acid or a corresponding mixture of a mineral acid and nitrate of soda. The wood is washed again and neutralized, and the pulp is then ready for further treatment.

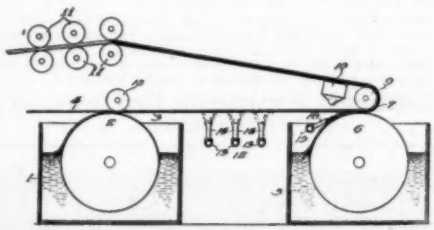
It has been found that in those cases where the chips are not too large, that is, when the thickness is not more than two to three millimeters, the manufacture of pulp from such materials can be accomplished without the need of using alkalies in the digestion process, if the nitric acid is used in somewhat greater concentration, that is approximately seven per cent concentration, if the temperature is maintained as near as possible to the boiling point, that is approximately at 94 to 96 degrees C. and if the heating period is prolonged to a certain degree, approximately to six hours. In this case, the digestion may be carried out in open digesters without pressure, whereat the evolved nitrous gases are caught and reconverted into nitric acid.

The digestion may accordingly be carried out in two stages. The first stage is heating with acid, and the second neutralization. The wood is washed with water between the two stages. The simplification of the process is especially important where cheap nitric acid is available.

Thus, pine wood chips are treated with eight times their weight of seven per cent nitric acid for six to eight hours, the heating being accomplished by indirect steam, so that the temperature of the mass is maintained between 95 and 96 degrees C. Then the acid is drawn off and the mass is washed twice with warm water. The first wash water is added to the drawn off acid and the diluted acid is then brought up to the proper concentration by the addition of strong acid. The second wash water contains traces of acid only and is not worked up. The digested mass is washed into a beater and there it is neutralized by means of soda. The pulp is beaten in the beater in the usual fashion, then washed and finally pressed into sheets. Dr. P. Krais, Dresden, Germany. German Patent No. 464,240.

Papermaking Apparatus

THE process is concerned with the manufacture of a waterproofed paper. Two fibrous pulp vats (1) and (5) are provided with cylinder moulds (2) and (6), which are rotated



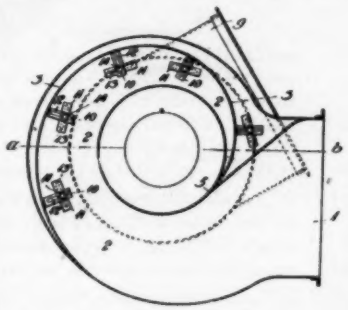
in them. Suction is applied from the interior of these moulds and thus a web of paper is formed on the surface of the cylinders. A continuous felt (4) makes contact with both of these cylinders and removes the web of fibrous material that is formed on them. Spraying means are provided at (14) for giving the paper web a coating of waterproofing material. L. Kirschbraun, Chicago, Ill. United States Patent No. 1,686,818, filed Nov. 4, 1921.

Behavior of Lignin and Chlorolignin in Preparing Wood Pulp by Means of Chlorine

IN THE de Vaines and Pomilio chlorination processes, the preliminary treatment of the material with soda leads to economy in the total consumption of soda. In the pretreatment of wood, high concentration of soda and high cooking pressure both tend to reduce the amounts of soda and chlorine required in the later stages of the process. The net soda consumption is also reduced by utilizing the digester liquor for washing out the chlorolignins. By the extraction of chlorolignin with alcohol, it is shown that the rise in temperature of the material during chlorination and the addition of hydrochloric acid increase the yield of extract. Prolonged treatment with chlorine increases the yield of chlorolignin and also its chlorine content. It is suggested that in the process chlorolignin is partially hydrolyzed by the water present, and the addition of hydrochloric acid retards this. Further prolonged exposure to chlorine results in the production of more highly chlorinated compounds, having greater solubility in alcohol. Hydrochloric acid formed during chlorination causes some degradation of cellulose, but by careful control an alpha cellulose content of 95 to 96 per cent may be attained. P. Waentig, Zeitschrift fuer angewandte Chemie, 1928, volume 41, pages 977-980.

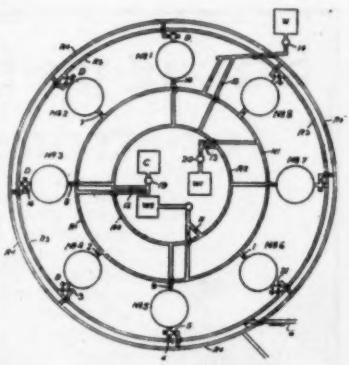
Charging Pulp Digesters

THE apparatus consists of a feeding funnel (1) through which the charge is introduced and a gas conveying passage (9) through which a gaseous medium is forced into the digester. The latter passage extends helically around the funnel, as may be seen from the accompanying illustration. This helical passage (2) opens into a space which is adjacent to the outlet opening of the funnel, with the result that when the charge leaves the outlet opening (5), it is caught by the gaseous medium and entrained, thereby gaining even distribution throughout the digester. P. A. Fresk, Robertsfors, Sweden. United States Patent No. 1,690,192, filed April 4, 1927.



Paper Pulp from Fibrous Vegetable Material

THE illustration shows an arrangement of several digesters and auxiliary equipment which is used in the manufacture of paper pulp from fibrous vegetable material. The digesters are charged in the usual manner. Digesting liquor is then introduced into one of the digesters and thereby a part of the soluable matter in the material is dissolved. The resulting liquor is then removed and liquor of greater concentration and higher temperature and under greater steam pressure is introduced into the same digester. The process is continued utilizing liquors of greater concentration, heat and pressure at each stage. The digesting liquor is removed from one digester and introduced into the next digester in series. Thus, the partially spent liquor from each stage is used in similar extractions of the less extracted materials in another digester, whereat the most extractive liquor is applied to the material that is most completely extracted. E. from one digester and introduced into the next digester in Spencer, Calcutta, India. U. S. Patent No. 1,690,954, filed Feb. 10, 1928.



Sulphite Digestion with Mixed Liquor

SOME pulp mills are accustomed to digest wood by the sulphite process in which the digestion liquor is made by withdrawing a certain amount of liquor from another digester and mixing this, after it has been allowed to settle at a temperature of 120 to 135 degrees C., with fresh liquor. While heat is economized by such practice, nevertheless it is not decided just what effect such a mixed liquor has on the digestion process. It has been indicated that the use of such a liquor will injure the whiteness and the quality of the

WHAT DO YOU EXPECT FROM YOUR FLOAT VALVE?

Unbounded satisfaction is the guarantee that goes with every Davis Float Valve. Many years of service have proven the unusual merit of this automatic control valve. Used on the makeup line to an open tank, it will maintain the desired water level without a thought from anybody.

It's a single seated, tight closing valve. There is no internal packing. It will not leak or stick. It has a standard renewable disc—maintenance cost is negligible.

It's a distinctive valve that will please the most discriminating user. Try one.

Booth No. 82, Chicago Power Show, February 12-16, 1929

G. M. DAVIS REGULATOR CO.
414 MILWAUKEE AVE. CHICAGO, ILL.

Balanced Valve Pressure Regulator Steam Trap Back Pressure Valve
Stop and Check Valve Exhaust Relief Valve Non-return Valve
Butterfly Valve Float Box with Control Valve

DAVIS AUTOMATIC VALVE SPECIALTIES

PI12-Gray

UNFAILING SERVICE

DUE to their unfailing service on water, steam, gas, oil, air, and lines controlling solutions destructive to ordinary bronze or iron, Powell Valves are used extensively in paper mills.

Fig. 102
Bronze "White Star" Globe Valve

Made in the full range of types and sizes, you can standardize on Powell Valves and eliminate pipe line faults due to valve leakage.

THE WM. POWELL CO.
2525 Spring Grove Ave.
CINCINNATI, OHIO

POWELL VALVES

Strong preferences for strong valves

There are engineers by the thousands who standardize on "valves marked with the Jenkins 'Diamond' and signature." Preferences are strong, for the valves are strong, and give trouble-free service year after year.

Strength is insisted upon at every stage of Jenkins manufacture. Metals are chosen with care, and are analyses-checked by competent metallurgists. Design and construction provide for strength in every detail. Assembly and tests are under thorough supervision, and a wide safety margin is allowed in proving each valve's worth in actual service before it leaves the factory.

JENKINS BROS.
80 White St.....New York, N. Y.
524 Atlantic Ave.....Boston, Mass.
133 No. Seventh St.....Philadelphia, Pa.
646 Washington Boulevard...Chicago, Ill.
JENKINS BROS., LIMITED
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.
PITTSBURGH, PA.

STEEL PLATE CONSTRUCTION
Riveted and Welded
Specialists in PAPER DIGESTERS and Heavy Plate Work
RITER-CONLEY COMPANY
Pittsburgh, Pa.

For the hard pull and steady drive use Quaker Belts

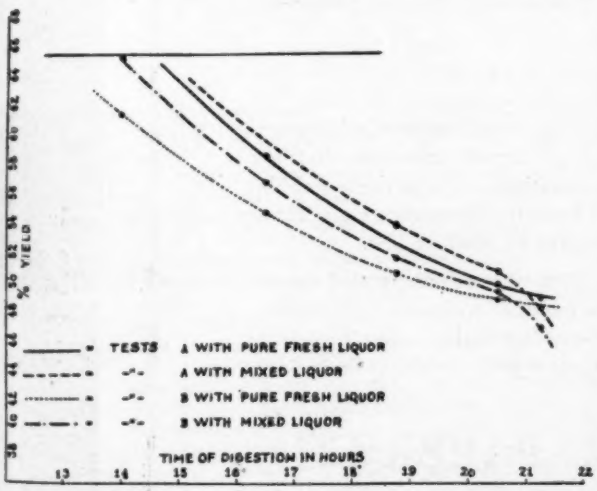
The record of Quaker Rubber Belts on the hardest drives in paper mill operation is convincing evidence of their capacity to handle any power requirement.
Whether on beater drive or in continuous transmission service, sturdy Quaker Belts deliver the power with lowest losses.

QUAKER CITY RUBBER CO.
WISSINOMING, PHILADELPHIA
Branches:
New York, Chicago, Pittsburgh, San Francisco

pulp in other ways. On the other hand, it has also been said that the presence of certain organic substances in the mixed liquor has a favorable action on the digestion. The investigations that were preliminarily carried out by the author indicated that the presence of these organic substances in the liquor and particularly the sugars (aldoses) have an unfavorable effect on the digestion process for the reason that the stability of the liquor is markedly affected by these substances as they have a catalytic action on the sulphurous acid or sulphites contained in the digestion liquor. The indication is, therefore, that both the quality and the yield of the pulp are adversely affected.

Experiments were made in two ways. One set was carried out in tubes which remained stationary in the cooking bath and were rotated only back and forth, and another set in tubes which were continuously rotated during the digestion process. The results that were obtained in these experiments are shown in tabular and curve form in the original article.

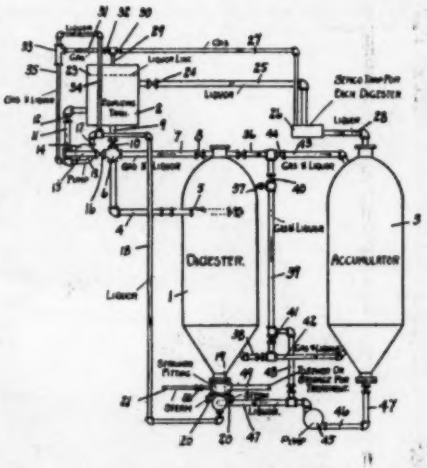
The following conclusions were drawn from these results. When a mixed liquor is used which contains one-third sulphite waste liquor, pulp is obtained of inferior grade of whiteness even when the liquor is vigorously circulated. The pulp is yellowish although the degree of disintegration is normal. The danger that the pulp will be badly colored is much greater when the liquor is not circulated, hence, when the process would be carried out in practical stationary digesters. Furthermore, the yield is considerably less under these conditions. The reason for the production of an inferior grade of pulp when mixed liqour is employed is that towards the end of the digestion the formation of sulphuric acid due to decomposition of the sulphite is greater with resulting greater concentration of acid in the liquor than in the case where fresh liquor is used. Furthermore, digestion with the mixed liquor takes somewhat more time than when fresh liquor is used. This is due to the fact that the diffusion of the mixed liquor is not so rapid as that of the fresh liquor. This also leads to the conclusion that the danger of over-cooking when working with mixed liquor is considerably greater than when using fresh liquor. In the manufacture of sulphite pulp and particularly in the preparation of easy-bleaching pulp, as, for example, pulp which is to be manufactured into rayon, the use of excess liquor should be avoided for the reason that increase in the acidity



of the digestion liquor has the effect of reducing the alpha cellulose content of the pulp. The latter property of pulp is of course, extremely important when it is used for rayon manufacture. E. Haegglund Der Papierfabrikant, volume 26, year 1928, pages 657-661.

Digestion Process

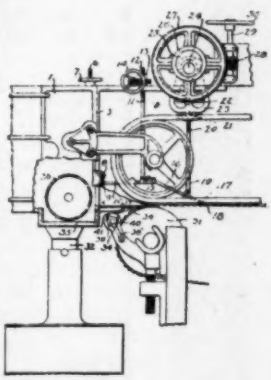
CHEMICAL pulp is obtained by digestion of raw materials in a digester while introducing steam into the same. The steam is permitted to condense and to mix with the liquor which is used for digesting purposes. The mixed liquors are continuously circulated through the raw material. After the mixture reaches a predetermined volume, the excess of liquor is directed into the accumulator which is shown at (5)



in the accompanying illustration. T. L. Dunbar, Watertown, N. Y., assignor, Chamipulp Process Inc. Filed April 22, 1927. United States Patent No. 1,669,234.

Papermaking Machine

THE machine is provided with a stock box, and a stock retaining board which is pivoted to the box. A slice is pivoted to the board. Thus, an area for the accumulation of the stock is formed between the stock box and the slice. N. J. Niks, Chillicothe, O. Filed May 18, 1927. United States Patent No. 1,690,203.



White Half Stuff from Hemp Waste

UP TO the present time, such a half stuff has been prepared by cooking the disintegrated raw material for six to eight hours under a pressure of three atmospheres, then the pulp is beaten and screened and finally bleached. After bleaching it is necessary to repeat the digestion for two hours with subsequent rebleaching. Experiments were accordingly made to manufacture a useful pulp according to the chlorination method. The disintegrated raw material was mixed with a three per cent solution of sodium hydroxide (ten per cent on the weight of the raw material) and allowed to remain in this solution. After two hours or thereabout the sodium hydroxide liquor is drawn off and the material is treated with chlorine in a box or kettle. The duration of the process is one hour. The consumption of chlorine is ten per cent on the weight of the raw material. The washed stock is then treated with a solution of commercial ammonia (three per cent on the weight of the stock) and thereafter it is bleached with a solution of chloride of lime and sulphuric acid. After the bleached stock is washed with an little antichlor, a pulp is obtained which is quite like that which is obtained in accordance with the double bleaching process described above. A. Fast, Bumaschnaja Promischlennost, volume 7, year 1928, pages 458ff.

Dr. Th. C. Bentzen, of the Whiting Plover Paper Company, Stevens Point, Wis., has been accepted by the Joint Committee on Approved Pulp Testing Chemists as a mill pulp testing chemist.

The Word of the Law

Once there was no law except the revelation of religion. Once there was no legal decision except that of priest or chieftain. But with the development of a social consciousness there has come the necessity of accumulating precedent, codifying opinion, preserving the voice of equity.

The labored scroll, its parchment background a tedious thing to produce and to indite upon, served the records of justice for many a generation, many a century. Its coiled surface held sacred —and often secret—those charters of human freedom that are oft written in the decision of minor questions. From these pebbles of rightness dropped into a sea of human adjustment came those ripples that have swelled into the waves of modern law.

Today the factors, the testimonies, the questions and exceptions of every trivial case are put on paper, duplicated with carbon, machine or printing press and preserved for the social benefit of the race. For paper without limit fosters justice without limitations.

HAMMERMILL PAPER CO.

ERIE, PA.

IT IS generally agreed in the trade that demand for paper of most classes is fairly active, and that, from a volume standpoint, business at present is all that could reasonably be expected and doubtless is exceeding in some measure the scope ordinarily noted at this time of the year. Buyers are operating in the market in a very consistent fashion, and the demand is quite general in character—covering as it does practically all kinds of paper and board. And yet, the market situation is not at all satisfactory to either manufacturers or merchants, a majority of whom are complaining rather bitterly anent the lack of a suitable profit in paper under prevailing marketing circumstances.

While demand is good, there is not a sufficient amount of business developing to provide mills with ample work to keep them fully engaged, which has been the situation for some time. There is still keen competition for orders. Each and every manufacturer is leaving no stone unturned in his efforts to get all the business possible—with a view to operating his mill at maximum capacity in the hope that through full production the cost of manufacture will be lessened and the margin of profit on his product increased. There is not the least hesitation in some parts of the industry to cut prices, and fairly deeply, when to do so means that orders are secured. Within the last month, in fact, there have been several instances of sharp price-slashing, and added to this is almost the same degree of competition among distributors of paper, who are bent on obtaining every whit of business that is to be had, so that all through the industry operations are netting manufacturers and merchants alike very limited remuneration.

There has been a sharp drop in newsprint prices. A sudden determination on the part of one of the biggest producers to reduce the contract basis for 1929 has brought the print paper price situation to a climax, and while as yet nothing definite has been decided by the manufacturers, it can be stated that leading producers in the United States and Canada have held a series of conferences in Canada at which a concerted effort has been made to stabilize the industry through the medium of curtailing production, and there appears every hope that something concrete and beneficial will result from these conferences, which, incidentally, were instituted by Government officials of the Provinces of Ontario and Quebec.

What the 1929 contract basis on newsprint is to be is not thus far known. However, it seems reasonably certain that it will be less than that obtaining this year. It is reported that prices all the way from $50 to $60 per ton were suggested at the manufacturers' conferences, and it is believed generally in the trade that a basis somewhere in the vicinity of $57 a ton f.o.b. mills for standard newsprint in rolls will be agreed upon ultimately.

Another very drastic change in prices has occurred in box board. Certain leading producers in the East around the middle of November suddenly cut their quotations on plain box boards to $30 a ton delivered in New York City for chip and $32.50 for filled news board, with corresponding declines effected in other grades. This constituted a reduction overnight of $5 per ton, and was the outcome of what might well be termed a price war which had been raging in the board manufacturing branch of the industry for some while. Some manufacturers had been repeatedly granting concessions to buyers, and the situation became so unbearable, so it was stated, that certain of the foremost mills decided to "take the bull by the horns" and put a stop to the price cutting by making a deep slash in quotations. How long the low prices will be continued is a question, but it is believed they are temporary only, as it is asserted that board producers can scarcely hope to break even in marketing board at the reduced rates under present manufacturing costs.

Production of paper in the United States took a market turn downward during September as compared with the preceding month, according to the monthly statistical summary of the American Paper and Pulp Association. During September mills of the country produced a total of 549,287 net tons of paper and board of all kinds, contrasted with 609,421 tons in August. Shipments from mills in September amounted to 561,634 tons, against 608,528 tons in the preceding month, and stocks at mills at the end of September aggregated 279,525 tons, compared with 290,808 tons a month previously. The greatest consolation in these figures is that mill stocks declined considerably in September, which can be taken as an indication that manufacturers are keeping their output more within the scope of demand, as attested to by the fact that shipments from mills during September were larger than the production in that month. The report shows that the total production of paper and board in the first nine months of this year was 5,197,631 tons, showing a fair rate of increase over the 5,093,410 tons produced in the corresponding period of last year.

The output of newsprint was on a high level in October, according to the News Print Service Bureau. Mills in the United States produced a total of 121,613 tons and shipped out 120,927 tons, while production in Canada was 216,602 tons and shipments were 221,742 tons, making a combined total for the two countries of 338,215 tons produced and 342,660 tons shipped. During October, 21,176 tons of newsprint were made in Newfoundland and 1,353 tons in Mexico, so that the total North American output reached 360,744 tons in that month. The Canadian production in the first ten months of this year showed a gain of 14 per cent, while the U. S. output recorded a loss of 6 per cent. The total North American production for the ten-month period was 6 per cent greater than in 1927. During October the Canadian newsprint mills operated at 81.1 per cent of rated capacity, and the United States mills at 81.2 per cent. Stocks of print paper at Canadian mills at the end of October were 37,018 tons and at U. S. mills 36,380 tons, making a combined total of 73,398 tons, which was equivalent to 4.8 days' average production.

Paper board production in the United States totaled 227,421 net tons in September, against 230,750 tons in the preceding month, according to the monthly statistical summary of the board industry compiled by the U. S. Department of Commerce in Washington. Despite the drop in tonnage output, board mills produced at a greater rate of capacity during September or at 86.1 per cent, against 77.7 per cent in August, the explanation being that September was a shorter working month. New orders received by mills during September called for a total of 234,458 tons of board, contrasted with 236,682 tons in the preceding month, while unfilled orders held by manufacturers at the end of September called for 87,262 tons, against 81,815 tons a month previously. Shipments of board from mills in September aggregated 229,460 tons, compared with 233,104 tons in August, and mill stocks amounted to 45,815 tons of board at the end of September, against 47,709 tons a month earlier.

Pre-holiday buying has created a fairly active market recently for wrapping and tissue papers, and business in these grades has been of good volume. Fancy cover papers for paper box and similar work have moved freely. Fine papers have shown some business expansion although consumers continue to buy cautiously, and mostly in small quantities against direct requirements. Book papers are in steady demand, particularly against contracts, and parchment, glassine and specialty grades have enjoyed moderate market activity. Demand for box boards has been quite brisk since the recent drop in prices, and mills are said to be well booked up with orders.

SOLVAY PRODUCTS

Soda Ash
Caustic Soda

Liquid Chlorine

Contract or Spot Delivery

In tank cars and multiple unit cars

Write for Prices

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by
The Solvay Process Company

40 RECTOR STREET **NEW YORK CITY**

Boston **Syracuse** **Chicago** **Indianapolis** **Cleveland**
Cincinnati **Pittsburgh** **Detroit** **Philadelphia**
Kansas City **St. Louis** **Atlanta**

Papermaking Rags

The demand for some grades of papermaking rags is reported fairly active, and prices of such descriptions not only are firm but in instances are showing a gradual trend upward. On the other hand, there are grades which are in nothing more than routine call and it is just as likely as not that consumers are placing orders in certain quarters at slight recessions from the prices dealers ask. Thus, a rather irregular condition exists in the market, and prices in some cases are uncertain decidedly, depending altogether on the scope of demand for such grades and the contributing factor of available supply.

It is apparent that paper manufacturers are buying rags cautiously. When there are requirements to be filled, purchases are made readily enough, but otherwise consumers are engaging in very restricted buying. In other words, demand is almost entirely against actual and direct needs. No longer are paper mills anticipating their wants and buying rags for stock. They are permitting the dealer to "hold the bag," as the saying goes, and evidently have found thus far that they have been occasioned no difficulty through the practice of this policy in buying, because, according to all reports, they have secured all the supply desired whenever in need of rags. It is a fact that at present a few certain kinds of papermaking rags are in low supply, and dealers are putting much emphasis on the trouble they are having in locating usual amounts of such rags, owing to the decreased production, it is said, but in such instances mills as a general thing are managing to cover their requirements—if not with the specific class of rags sought, with other similar grades. A development in the market in this connection is that offerings of rags from abroad have increased recently; European shippers, and more especially those in Germany, display more desire to sell rags in the United States, which probably means that the markets on the other side of the Atlantic are quieting to some degree and which may serve to relieve any scarcity that may exists in certain rags here.

New cuttings exhibit the greatest price strength, and prices of some cuttings have scored a little advancement. There is a particularly good call from mills for blue overall cuttings, which are quoted by dealers at 7 cents or higher per pound f.o.b. shipping points: for light silesias. at about 7.50 cents; for unbleached cuttings, which are selling at 11 cents and more at dealers' points; for fancy shirt cuttings, at 5.50 to 5.75 cents, and for No. 1 washables at 4.25 cents upwards. On the other hand, new No. 1 white shirt cuttings are in slow demand, and available supplies of these rags are abnormally large, with the result that paper mills have succeeded in buying at 9.50 cents and perhaps at a shade under this price at shipping points.

Roofing rags are holding their own in price, but are in rather limited demand. Dealers quote No. 1 domestic stock or cloth strippings at 1.70 to 1.80 cents a pound at shipping points, and No. 2 domestic at 1.35 to 1.40 cents, while foreign dark colored cottons are reported available at 1.55 and 1.60 cents a pound ex dock New York, Philadelphia or other American Atlantic ports. Old white rags are steady quotably at 5.50 cents a pound upwards at dealers' points for No. 1 repacked, depending on the quality of the stock concerned, and 2.50 cents or more for No. 2 repacked, while thirds and blues of repacked grade are selling at 2.25 to 2.50 cents, and miscellaneous blues at around 1.85 cents.

There is no important change in quotations on imported grades though the slight revisions that have been noted in prices have been mostly in a downward direction.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	9.50-10.00
White shirt cuttings, No. 2	6.00- 7.00
Fancy shirt cuttings	5.50- 5.75
Washable, No. 1	4.25- 4.50
Unbleached muslin	11.00-11.25
White lawns	9.00- 9.25
Overall cuttings, blue	7.00- 7.25
Black silesias	4.25- 4.50
Light flannelettes	7.75- 8.00
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	7.50- 8.00
Shoe cuttings, unbleached	6.00- 6.50
Light silesias	7.50- 7.75
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.00- 3.25
Linens, No. 1, white foreign	13.00-14.00
Light prints foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.50- 5.75
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.25- 2.50
Black stockings	4.10- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.25- 4.50
Roofing, No. 1 (cloth strippings)	1.70- 1.80
Roofing, No. 2	1.35- 1.45
Linsey, garments, foreign	1.75- 1.80
Dark colored cottons, foreign	1.55- 1.60
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Prices of old rope have adopted a distinct upward trend under a much broader demand for the commodity from paper mills. It would appear, and reports confirm this assertion, that old rope is coming back into its own as a papermaking material, following a rather lengthy period during which manufacturers of insulation and bag papers have used kraft wood pulp in place of old rope, and the larger demand has created a firmer price tone in old rope. Sales of No. 1 domestic old manila rope have been made to mills at 4 cents and higher per pound f.o.b. shipping points, and imported No. 1 rope has brought up to 3.75 cents ex dock New York. Strings, however, are in a quiet market position, and mixed strings are reported available to paper mills at around 95 cents per hundred pounds at shipping points.

The demand for scrap bagging is routine principally, and prices remain in a more or less stationary position. No. 1 scrap burlap is quoted at around 1.65 cents a pound f.o.b. dealers' points, and roofing bagging at 1.25 to 1.30 cents.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60-1.70
Gunny, No. 1 foreign	1.50-1.60
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.25-1.35
Wool tares, heavy	2.00-2.25

"Superior" Rosin Size

In Tank Cars or Drums

SUPERIOR CHEMICALS
TRADE MARK

QUALITY STILL PAYS DIVIDENDS

The purchase of a really good cigar by one who enjoys his smokes is money well spent. So it is with everything else, whether it be a pair of shoes, a ton of coal or a tank car of "SUPERIOR" ROSIN SIZE.

The makers of SUPERIOR ROSIN SIZE are ever on guard to investigate and improve the quality and distribution of this product, in order that the paper mills in the United States, Canada, Great Britain and Continental Europe may be afforded the highest quality Size delivered to them as economically and uniformly as possible.

SUPERIOR ROSIN SIZE is truly the most used sizing agent today (here and abroad). It is constantly winning new friends and keeping them.

Paper Makers Chemical Corporation

Easton, Pa.	Kalamazoo, Mich.	Holyoke, Mass.	Albany, N. Y.
Atlanta, Ga.	Marrero, La.	Stoneham, Mass.	Carthage, N. Y.
No. Milwaukee, Wis.		Portland, Me.	Lockport, N. Y.
Savannah, Ga.	Jacksonville, Fla.	Boston, Mass.	Pensacola, Fla.

AND ASSOCIATES

C. K. Williams & Co., Easton, Pa., Emeryville, Cal., Malaga, Spain
Geo. S. Mepham & Company, East St. Louis, Ill.
Paper Makers Chemicals, Ltd., Erith, Kent, Eng.
Paper Makers Importing Co., Easton, Pa., St. Austell, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ont.

"There is a Superior Plant near you"

SUPERIOR PRODUCTS

Rosin Size
Wax and Special Waterproofings
Satin White
English and Domestic Clays
Casein
Casein Solvents
Foam Killers
Felt Soaps
Soap Powder
Vegetable Tallow
Anti-Froth Oil
Softeners
Colors Dry and Pulp

ALKALI

ALKALI

QUICK DELIVERY & HIGH QUALITY

Plus a Dependable Source of Supply

That, in short, is the ideal combination of advantages you get when you specify Diamond Alkalies.

Diamond Alkali service is as near as your telephone. If your local distributor is not listed in your telephone book write or wire us and we will see that your alkali needs are immediately supplied.

Diamond Alkali Company · Pittsburgh, Pa. ***and Everywhere***

Wool tares, light	1.75-2.00
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.00-4.25
Sisal strings	1.50-1.75
Mixed strings	.90-1.10

Old Paper

Some little recession has been recorded in prices of certain grades of old paper, but generally the market continues to be characterized by moderate firmness and quotational levels remain comparatively high for this period of the year. Demand from consuming quarters is not bad; if anything, mills are buying in better than normal tonnage, and appear to be consuming waste paper in fairly large amounts. Moreover, it is asserted that the supply situation is such that it constitutes a factor in helping to sustain market values, available supplies of most grades being only about sufficient to fill the wants of buyers.

Shavings are moving into consuming channels in a steady manner, more especially the high-quality packings, and sales of No. 1 hard white shavings have been reported up to 3.10 and 3.15 cents a pound, with other packings available down to 2.75 cents f.o.b. dealers' shipping points. Soft white shavings are quoted on a range of 2.30 to 2.60 cents a pound, according to the quality of packing. Old kraft paper of No. 1 grade is selling at 1.90 to 2 cents per pound at shipping points, ledger stock at 1.60 to 1.85 cents a pound, No. 1 heavy books and magazines at 1.50 to 1.60 cents, and No. 1 crumpled book stock at 1.25 to 1.35 cents. Old folded newspapers are quoted from 70 to 80 cents per hundred pounds at dealers' points, and No. 1 mixed paper at 55 to 65 cents.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.75-3.15
Hard white shavings, No. 2	2.50-2.75
Soft white shavings	2.30-2.60
Colored shavings	1.00-1.25
Heavy book, No. 1	1.50-1.60
Crumpled book, No. 1	1.25-1.35
Ledger stock	1.60-1.85
Kraft, No. 1	1.90-2.00
New kraft cuttings	2.50-2.75
Manilas, No. 1	.80- .90
Folded news	.70- .80
Sulphite mill wrappings	.80- .90
Old corrugated boxes	.75- .85
New corrugated box cuttings	.85- .95
Mixed paper, No. 1	.55- .65
Common paper	.40- .50

Pulpwood

The in-between season is being experienced in the pulpwood industry, and there is little market activity of much consequence at present. Contract deliveries are being made regularly in some quarters, but fresh buying is at a minimum and prices therefore are given little opportunity to change and are reported holding nominally at about last named levels.

Mechanical Pulp

The market for mechanical wood pulp is displaying a firmer tone all around; prices are inclining upward and in some quarters are on a slightly higher level, and demand from consuming quarters is said to be improved to a substantial degree. Grinders in a majority of instances are insisting on the full prices quoted, and are said to be frequently turning down business when unable to secure the prices asked. Canadian producers are quoting $27 a ton or higher f.o.b. pulp mills in the Dominion for prime, freshly ground wood, and domestic manufacturers are asking around this same price, depending on the air dry test and the freight to consuming centers. Imported ground wood of Scandinavian origin is quoted at $33 per short ton ex dock American Atlantic ports for dry pulp for forward shipment from abroad.

GDC

THE G D C POLICY

QUALITY FIRST

For the Coloring of Bond Papers

If you are confronted with two-sidedness we especially recommend

FAST BOND YELLOW N T G G
FAST BOND ORANGE N T G R
FAST BOND SCARLET N T R R
FAST BOND GREEN N T G G
FAST BOND BLUE N T G B
FAST BOND BLUE N T B B

EXCELLENT FASTNESS TO LIGHT

NEKAL B EXTRA

An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

230 Fifth Avenue, New York, N. Y.

Boston, Mass. Philadelphia, Pa.
Chicago, Ill. Providence, R. I.
Charlotte, N. C. San Francisco, Cal.

GENERAL DYESTUFF CORPORATION

RUSS GELATIN CO.

WORKS—WESTFIELD, MASS.

MANUFACTURERS OF

GELATIN and GLUE

ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON

FINE WRITING PAPER SIZING

E. F. RUSS COMPANY 27 Atlantic Avenue BOSTON, U. S. A.

NATRONA POROUS ALUM

Liquid Chlorine

Single Unit Tank Cars Multi-Unit Tank Cars
150-Lb. Cylinders (1-Ton Containers)

Commercial Sulphate of Aluminia

Standard Bleaching Powder

Pennsylvania Salt Mfg. Company

Philadelphia, Pa.

The
Sandy Hill Iron & Brass Works

HUDSON FALLS
N. Y.

MANUFACTURERS
of

Paper
&
Pulp
Mill
Machinery

F.W. ROBERTS MFG. CO. INC.
LOCKPORT N.Y. U.S.A.
F.W. ROBERTS MFG. CO.
OF CANADA LTD.
NIAGARA FALLS ONT.
MANUFACTURERS OF
PAPER & PULP MILL SPECIALTIES

Sulphur

A FIRST REQUISITE
IN
Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.
41 E. 42nd Street New York City
Mine Gulf, Matagorda County, Texas

Production of ground wood in the United States during September amounted to 70,308 net tons, compared with 75,842 tons produced in the preceding month, while mill stocks at the end of September were 86,438 tons, against 96,214 tons a month earlier, according to the American Paper and Pulp Association. Stocks at the close of September were the smallest in more than a year, which indicates that grinders are confining their production to pulp required for consumption or against orders in hand.

Chemical Pulp

Since the national election early in November demand for chemical wood pulp has been quite active. Paper and board manufacturers have been operating in the market in goodly number and have entered purchasing engagements involving large tonnages of the several classes of pulp, for shipment during the remainder of the present year and also for delivery in 1929. It would appear as if the Presidential election result had a reassuring effect on papermakers, and that, after being rather reluctant about buying pulp ahead, they became less credulous and increased their commitments on their principal raw material substantially.

Practically all grades of chemical pulp have shared in the buying movement, and while prices have not been influenced to the extent of causing them to rise, at the same time a steadier undertone has been developed and market levels seem better established than in some while. Prime bleached sulphite of domestic manufacture is quoted at 3.75 to 4 cents for the more popular brands, with 4.25 cents and higher asked for some grades, while strong unbleached sulphite is quoted at 2.75 to 3 cents f.o.b. pulp mills for book grades and at 2.50 to 2.75 cents for newsprint grades. Bleached soda pulp is reported fetching 3 to 3.25 cents a pound at producing points, and No. 1 domestic kraft pulp 75 cents or higher.

During September, 1928, mills in the United States produced a total of 113,865 net tons of chemical pulp of all grades, contrasted with 124,785 tons in the preceding month. Mill stocks at the end of September amounted to 25,441 tons, against 25,486 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

No change will be made in contract prices of bleaching powder for 1929 from those obtaining this year, according to announcement, and bleach in large domestic drums is quoted at 2 to 2.35 cents a pound at works. A steady movement of caustic soda is reported and prices are maintained at 2.90 to 3 cents per pound f.o.b. works, while soda ash quotations remain on a basis of 1.32½ cents a pound for the 50 per cent light product packed in bags at works. Casein prices are about unaltered at 15 to 17 cents per pound, inclusive of the domestic and imported product.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	3.50 - 3.75
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty paid)	15.00 -17.00
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	15.00 -20.00
Rosin, Grade E	9.60 - 9.70
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	4.07 - ....
Talc (ton)	16.00 -18.00

uses
Silicate of Soda
in the beater?

A question which is often put to us.

Makers of the following kinds of paper use Quartz Quality silicates regularly:

Kraft	Offset
Writing	Cover
Butcher's	Bristol
Tissue	Container Board
Wrapping	Magazine
Book	Trunk Fibre Board

and others. We wouldn't mind giving you the names of mills, but our customers have asked us not to, for the same reason that you wish your furnish kept confidential. We respect their confidence and yours as well.

When shall we send you a few drums of "A-Syrup" size for a comparative run?

Philadelphia Quartz Company
MAKERS OF SILICATE OF SODA
General Offices: Philadelphia
Chicago Office: 205 W. Wacker Drive

Cut your cost of Production
Improve your Quality
Increase your Profits
by
The use of Efficient Equipment
for

1. Woodpreparing
2. Acidmaking
3. Cooking
4. Screening
5. Dewatering
6. Drying

We cover the whole field

G. D. Jenssen Co.
200 Fifth Ave., New York City
Sole Representatives
For: Paper Machinery, Ltd.
Montreal, Quebec

Uncle Jake says—

"A hair-trigger talker is usually a slow-fire thinker"

When we talk to you about the merits of

KVP PAPERS

we are not "hair-triggering". We have not only thought it out but we have carefully worked it out.

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

WE ARE INTERESTED IN BUYING

Robt. Gair Company Class "A"
Great Northern Paper Company
Minnesota & Ontario Paper Pfd.
Donnacona Paper Company 5½s
Ticonderoga Pulp & Paper 5s & 6s
United Paperboard Co. Preferred
Keyes Fibre Company Class "A"

Private Wire Between Offices

PAPER - PULP - LUMBER - TIMBER
Securities
BOUGHT SOLD QUOTED

H. D. KNOX & CO.

44 Broad Street, New York, N. Y.
27 State Street, Boston, Mass.

Members Unlisted Securities Dealers Ass'n.

1864 1928

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
and direct

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Books—	
No. 1 S. & S. C.	5.75- 8.00
Machine finished	5.50- 8.00
English finished	5.50- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.00-15.00
Newsprint—	
Rolls, contract	3.00- 3.25
Rolls, transient	3.25- 3.50
Sheets	3.50- 3.75
Side runs	2.90- 3.15
Cover stock—	
Coated, both sides	-10.25
Coated, one side	-10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.75- .90
No. 1 Manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	5.50- 6.00
No. 2 kraft	4.25- 4.75
Southern kraft	4.25- 4.50
Boards—	New York and Chicago
Solid news	35.00-40.00
Straw	52.50-57.50
Plain chip	30.00-35.00
White coated chip	45.00-50.00
Manila coated chip	45.00-50.00
Binder's board	65.00-70.00

I. P. Co. Plans Another Southern Kraft Mill

International Paper Co. is planning the construction of another kraft paper mill in southern United States with a capacity of about 200 tons a day. A careful study has been made of sites offering the most favorable conditions and several are now under consideration in the Carolinas. The company expects soon to announce the selection of one of these sites for the location of its new mill.

The plant will be the sixth southern kraft paper mill of this company and will increase the daily capacity in this group of mills to about 900 tons of kraft paper and board. Two of the Company's southern mills are at Bastrop, La.; a third is at Camden, Ark.; a fourth is located in Moss Point, Miss.; and the fifth is the Mobile, Ala., mill now under construction.

J. L. Stille, sales manager of Continental Paper & Bag Corporation, a subsidiary of International Paper Company, has been elected a director of the Continental corporation.

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities and we will endeavor to furnish actual markets.

Bonds	Bid	Asked
Abitibi Fibre 6s, 1941	104	
Abitibi Power & Paper 5s, 1953	90	
American Sales Book 6s, 1939	102½	104
Advance Bag & Paper 6s, 1952	98	99¼
Bastrop Pulp & Paper 6s, 1940	104½	
Beaver Products 7½s	109	111
Beaverboard 8s, 1933	102	103
Bedford Pulp & Paper 6s, 1942	98	100
Belgo Canadian Paper 6s, 1943	101	102
British Columbia Pulp & Paper 6s, 1950	87	89
Brompton Pulp 6s, 1935	103	
Brush Moore Paper 6s, 1937	99¾	
Bryant Paper Co. 6s, 1942	100	101
Celotex Co. 6s, 1936		96
Canada Paperboard Co. 7s, 1937	100	103
Central Paper Co. 6½s, 1941	86	87
Central Paper Co. 6s, 1933	87	98
Central Paper Co. 7s	87	
Champion Fibre Co. 6s, 1941	99	100
Champion Paper Co. 6s, 1941	95	98
Champion Coated Paper Co. 6s	102	
Columbia River Paper Mills	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	92	94
Eastern Mfg. Co. 7s, 1938	100½	101½
Escanara Paper Co. 6s, 1939	98	100
Filer Fibre 7s, 1937	94	97
Fitchburg Paper Co. 5s, 1929	99	
Glatfelter Paper Co. 6s, 1938	94	96
Hawley Pulp & Paper Co. 6s, 1946	97	98½
Hoberg Paper & Fibre 7s, 1937	94½	96
Industrial Fibre Co. 8s	100	102
Itasca Paper Co. 6s	99	
Itasca Paper & Prairie River 5½s	100	
Jessup & Moore Paper Co. 6s, 1945	77	80
Kalamazoo Vegetable Parchmont 6s, 1938	99	101
Manitoba Paper Co. 6½s	103	105
Mead Fibre Co. 7s, 1937	100	
Munising Paper Co. 6s, 1936	98	
Marathon Paper Mills 5½s, 1942	99	
Marinette & Menomine Paper Co. 7½s	102½	103½
Mead Pulp & Paper 5s	95½	
Mengel Co. 7s, 1934	104	
Mengel Co. 7s, 1933	101	
Minnesota & Ontario Paper Co. 6s	94	95½
Missisquoi Pulp & Paper 7s, 1929	99	
Missisquoi Pulp & Paper 6s	98	
Monroe Paper Products Co. 7½s	97	99
Murray Bay Paper Co. 6½s	103½	
Oswego Falls Paper 6s, 1941	98	100
Orono Pulp & Paper 6s, 1943	102	
Orono Pulp & Paper 6s, 1941	97	
Parker Young Co. 6½s, 1944	99	101
Paper & Textile Machinery Co. 7s	100	103
Patterson Parchment 6s, 1938	101	102½
Peerless Paper Co. 6s	98	100
Penobscot Chemical Fibre 6s, 1942	102	104
Queen City Paper Co. 7s	97½	
Riordan Pulp & Paper 6s, 1942	102	
River Raisin Paper 6s, 1936	98½	101½
Rolland Paper Co. 6s, 1937	99	101
St. Regis Paper 6s 1931	100	100
St. Annes Paper Co. 6½s, 1953	103	105
St. Croix Paper Co. 6s, 1928	95	
St. Helens Pulp & Paper 6s, 1941	99	
St. Lawrence Pulp & Lumber Co. 6s	8	10
Spruce Falls Power & Paper 5½s	98	100
Stevens & Thompson Paper 6s, 1942	95	97
Southern Advance Bag & Paper 6s, 1947	94	96
Smith (Howard) Paper 6½s, 1941	103	
Smith (Howard) Paper 5½s, 1953	94	96
Taggart Bros. 6s, 1941	95	100
Tait Paper & Color Industries 6s	88	90
Ticonderoga Pulp & Paper 6s, 1940	100	102
Ticonderoga Pulp & Paper 5s, 1930	96	98
Tonawanda Paper Co. 5½s	99½	101
United Wall Paper 6s, 1947	96	98
Watab Paper Company 6½s, 1942	102½	104
Whitaker Paper Co. 7s, 1938	108	109
Warren (S. D.) 6s, 1945	104	105
Westfield River Paper Co. 7s	88	90

(*Continued on page* 1683)

The Pulp and Paper Trading Co.

21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.

21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The B.C. QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

PULP

PERKINS-GOODWIN CO.
Established 1846
551 FIFTH AVENUE, NEW YORK

PAPER

EXPORTS

Exports of paper from the United States in September showed a decline in point of value as compared with the preceding month but scored a gain contrasted with the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. The total exports of paper of all kinds from this country in September were valued at $2,098,810, against $2,748,111 in August this year, and $1,942,729 in September, 1927. Exportations in the first nine months of this year amounted in value to $22,641,979, showing a fair rate of increase over the exports of a value of $20,086,247 in the similar period a year ago.

Exports of newsprint paper in September reached a total of 1,203,680 pounds, valued at $46,720, contrasted with 1,946,680 pounds of a value of $76,660 in the preceding month, and 1,407,854 pounds of a value of $68,190 in September last year. Exports of book paper, not coated, were 1,543,001 pounds of a value of $108,625 in September, against 1,443,216 pounds of a value of $120,959 in the same month last year, while exports of wrapping paper in September were valued at $158,636, compared with $143,686 in the same month a year ago. Writing paper exports increased from a value of $136,855 in September, 1927, to $200,263 in the same month this year, while tissue paper exports were of a value of $67,927 in September this year, against $91,363 last year.

Shipments of paper board showed an appreciable gain in September compared with a year ago, amounting in value to $115,702 of box board and $146,421 of other paper board and strawboard, contrasted with $102,610 and $142,008, respectively, in the same month of 1927. Exports of paper bags were valued at $50,319 last September, recording a loss from the September, 1927, shipments of a value of $85,085.

IMPORTS

Wood Pulp

Reports with few exceptions divulged that a very good business has transpired recently in imported wood pulp. Paper and board manufacturers have been actively in the market as buyers since Election Day, and have absorbed sizable tonnage of nearly all classes of pulp for forward shipment from abroad, not only for the remainder of the present shipping season but well into next year. Indications were that consumers of pulp, being well satisfied with the result of the national election, stepped in afterward and covered their requirements in pulp freely, and it is very probable now that a majority of papermakers in this country have their needs well taken care of for some while to come.

Prices as quoted have not changed, but a decidedly firmer undertone has developed, and market values seem fully stabilized on stationary levels which appear likely to remain for some time. Sellers in general contend that prevailing prices of pulps are reasonable, if not attractive, and evidently consumers agree to some extent, judging from their purchasing operations in the market in recent weeks. Advices from primary sources abroad are rather on the bullish side, telling as they do of a fairly well sold up position of producers, and a maintenance of quotations. Importers and agents here are urging their paper mill customers to buy for 1929 shipment from abroad without hesitation, particularly as regards those certain mill brands of pulp which they are accustomed to using regularly, and the market activity of the last month seems ample proof that a good many papermakers are following this advice.

Imports of wood pulp into the United States recorded a little decline in September, as compared with the preceding month, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. During September a total of 111,955 long tons of chemical pulp of all grades, valued at $6,595,102, was imported, contrasted with 117,717 tons of a value of $6,891,979 in August this year, and 106,458 tons of a value of $6,488,839 in the corresponding month last year. The September importations brought the total for the first nine months of this year up to 941,210 long tons of chemical pulp, making a monthly average of 104,734 tons, and showing an increase over the monthly average of 99,497 tons in the same period a year ago. This means that in the nine-month period this year some 45,000 tons more of chemical pulp were imported than in the similar time of last year. Imports of mechanical pulp in September amounted to 19,601 long tons, of a value of $477,606, a gain compared with 15,387 tons of a value of $374,476 imported in the preceding month, but a decline from the 24,347 tons of a value of $627,024 imported in the similar month last year. During the first nine months of the current year imports of ground wood totaled 159,390 tons, against 152,790 tons in the same period a year ago.

Foreign prime bleached sulphite is firm quotably at 3.90 to 4 cents for the ordinary grades ex dock New York or other American Atlantic ports, with well above this price level named on high-quality brands. Strong unbleached sulphite of prime grade is selling at 2.55 to 2.70 cents a pound ex dock, while prime standard Swedish kraft pulp has sold freely at 2.50 to 2.65 cents, the lower figures being quoted on 1929 shipments from abroad and the higher for current shipment. Easy bleaching sulphite of prime quality is firm at 2.75 to 2.90 cents on the dock. Prime Scandinavian ground wood is quoted at $33 per short ton ex dock American Atlantic ports.

Current market quotations ex dock New York, and receipts at the port of New York during November, 1928, follow:

Bleached sulphite, No. 1	3.85- 4.25
Unbleached sulphite, strong No. 1	2.55- 2.75
Unbleached sulphite, No. 2	2.40- 2.60
Easy bleaching sulphite	2.75- 3.00
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.60- 2.75
Kraft, standard Swedish	2.50- 2.70
Ground wood, per ton (dry)	32.00-33 00

Perkins-Goodwin Co., 150 bls. from Sundsvall and 2,800 Obbola; M. Gottesman & Co., 475 bls. from Sundsvall and 2,345 Rotterdam; Borregaard Co., 336 bls. from Sarpsborg; J. Andersen & Co., 3,600 bls. from Sarpsborg; Pagel, Horton & Co., 600 bls. from Hornefors; E. M. Sergeant Co., 475 bls. from Oslo and 1,211 Gothenburg; Price & Pierce, 600 bls. from Bremen and 1,125 Gothenburg; Atterbury Bro., 1,500 bls. from Oslo; Castle & Overton, 4,435 bls. from Hamburg, 760 Rotterdam and 109 Gothenburg; Johaneson, Wales & Sparre, 719 bls. from Gothenburg; International Acceptance Bank, 125 bls. from Halmstad and 800 Oslo; Central National Bank, 375 bls. from Halmstad; International Forwarding Co., 47 bls. from Hamburg; E. J. Keller Co., 2,149 bls. from Hamburg and 400 Oslo; Order, 6,506 bls. from Kotka, 928 Hamburg, 2,220 Kemi, 1,250 Raumo, 155 Bremen and 1,600 Sebenico.

Paper Stock

Imports of papermaking rags into the United States during the first nine months of 1928 amounted to 333,535,259 pounds, valued at $6,103,262, showing an increase over the 279,311,946 pounds of a value of $5,700,851 imported in the same period a year ago, according to U. S. Department of Commerce official statistics. During the same time this year imports of waste bagging and waste paper amounted to 114,119,311 pounds, against 75,644,811 pounds in the first nine months of 1927, while imports of old rope and all other

MONTREAL LONDON PARIS BERLIN STOCKHOLM

The Label

DRYING FIDALGO SYSTEMS

on the Bale

FIDALGO DRYING SYSTEMS

(Not Connected With Any Pulp Mfg. Co.)

The Choice of

Union Bag and Paper Power Corporation, Tacoma, Washington
MR. HARDY S. FERGUSON, ENGINEER

Shaffer Box Company, Tacoma, Washington
MR. L. A. DeGUERRE, ENGINEER

Bogalusa Paper Company, Bogalusa, La.
MR. R. H. LAFTMAN, GENERAL MANAGER

Spaulding Pulp & Paper, Newberg, Ore.

Cornstalk Products Company, Danville, Illinois

Zellstofffabrik Waldhof, Mannheim, Germany

NO LICENSE FEE CHARGED

NOTICE—We make complete installations under specific performance guarantees and without charge for license under our broad patent claims. Bonded guarantees hold Customers harmless from infringement suits.

The above only authorized to operate under our trade mark and patent claims.

Our improved shredding, temperature and humidity control, best assurance high pulp test, uniform moisture content and cleanliness.

TECHNICAL ECONOMIST CORPORATION

Cable Address HERENCO | 40 RECTOR ST. N. Y. CITY | Telephone WHITEHALL 5243

Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.

17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

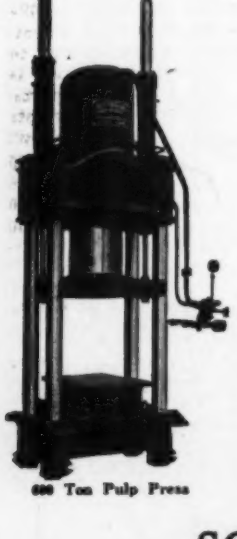
Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

SOUTHWARK

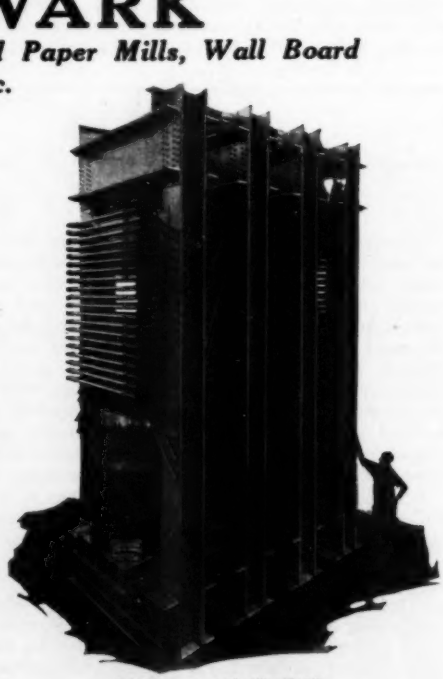
Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.



800 Ton Pulp Press

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6" 20 Opening Wall Board Press

SOUTHWARK FOUNDRY and MACHINE CO.

400 WASHINGTON AVENUE
PHILADELPHIA, PA.

CHICAGO
343 S. DEARBORN ST.

AKRON
100 E. SOUTH ST.

paper stock amounted to 45,794,598 pounds, contrasted with 48,031,378 pounds a year ago.

Importations of papermaking materials during November, 1928, were fairly large, with receipts of rags recording a gain. Arrivals of all grades of paper stock excepting wood pulp at the port of New York in November, these data being taken from manifests of steamers reaching that port last month, were as follows:

Old Rope—William Steck & Co., 94 coils; Chase National Bank, 89 bls.; Ellerman's Wilson Line, 41 coils and 36 bls.; Brown Bros. & Co., 907 coils and 273 bls.; Furness, Withy & Co., 84 bls.; Alexander H. Searle, Inc., 136 coils; Harry Miller, 91 bls.; Panama Pacific Line, 13 coils; W. Schall & Co., 48 coils, Order, 408 coils.

Old Bagging—Castle & Overton, 390 bls.; Bank of the Manhattan Co., 612 bls.; American Exchange Irving Trust Co., 165 bls.; Paul Berlowitz, 161 bls.; Overton & Co., 150 bls.; Darnstadt, Scott & Courtney, 193 bls.; Katzenstein & Keene, 197 bls.; E. J. Keller Co., 93 bls.; W. Schall & Co., 305 bls.; Order, 231 bls.

Rags—George W. Miller & Co., 185 bls.; S. Birkenstein & Sons, 143 bls.; Alfred Bloch & Co., 44 bls.; E. Mayer, 36 bls.; J. Cohen & Son Co., 168 bls.; William Steck & Co., 55 bls.; Victor Galaup, Inc., 194 bls.; Salomon Bros. & Co., 136 bls.; Darnstadt, Scott & Courtney, 492 bls.; A. Jaki, 2 bls.; Castle & Overton, 518 bls.; Charles Belsky & Co., 48 bls.; National Sanitary Rag Co., 60 bls.; Daniel M. Hicks, Inc., 74 bls.; Katzenstein & Keene, 103 bls.; M. Lobitz, 29 bls.; Paul Berlowitz, 185 bls.; E. J. Keller Co., 1,270 bls.; Jaffe Products Co., 62 bls.; Chase National Bank, 1,791 bls.; French-American Banking Corp., 315 bls.; Interstate Trust Co., 304 bls.; National City Bank, 99 bls.; Bank of America, 28 bls.; State Bank, 155 bls.; Bank of New York & Trust Co., 186 bls.; Guaranty Trust Co., 63 bls.; Garfield National Bank, 16 bls.; Equitable Trust Co., 189 bls.; Bank of the Manhattan Co., 164 bls.; Union Bank & Trust Co., 627 bls.; Chemical National Bank, 86 bls.; Philadelphia National Bank, 56 bls.; Banca Commerciale Italiana Trust Co., 50 bls.; American Exchange Irving Trust Co., 39 bls.; Bank of the United States, 87 bls.; Milton Snedeker Corp., 59 bls.; American Merchant Lines, 225 bls.; Porto Rican Express Co., 82 bls.; G. P. Lotterhand, 6 bls.; A. W. Fenton, Inc., 260 bls.; A. E. Fetterolf, 19 bls.; W. Schall & Co., 97 bls.; Van Oppen & Co., 15 bls.; T. D. Downing & Co., 24 bls.; Gallagher & Ascher, 74 bls.; Amsinck, Sonne & Co., 48 bls.; Order, 2,596 bls.

Miscellaneous Paper Stock—Whaling Waste Products Co., 326 bls.; Robert Blank, 38 bls.; William Steck & Co., 10 bls; Castle & Overton, 159 bls.; Alfred Bloch & Co., 121 bls.; Salomon Bros. & Co., 34 bls.; E. J. Keller Co., 960 bls.; J. H. Faunce, Inc., 104 bls.; Chase National Bank, 931 bls.; Bank of the Manhattan Co., 130 bls.; National City Bank, 55 bls.; Anglo-South American Trust Co., 626 bls.; R. F. Downing & Co., 121 bls.; Van Oppen & Co., 42 bls.; Antorg Trading Co., 322 bls.; W. Schall & Co., 358 bls.; International Mercantile Marine Co., 16 bls.; Panama Railroad Co., 65 bls.; T. D. Downing & Co., 30 bls.; Brown Bros. & Co., 67 bls.; Order, 877 bls.

Paper

Imports of paper into the United States in September, 1928, were of a total value of $11,890,203, representing a decline from the shipments of an aggregate value of $12,933,537 in the preceding month, and also a decrease compared with imports valued at $12,566,617 in the corresponding month last year, according to U. S. Department of Commerce statistics. During the first nine months of this year paper imports were valued at $100,813,424, contrasted with $95,323,122 in the similar period of 1927.

Paper imports during November, 1928, were fairly heavy, judging from receipts through the port of New York. Arrivals of all kinds of paper through that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Printing—P. C. Zuhlke, 72 cs. from Antwerp; National City Bank, 224 bls. from Hamburg; F. Henjes, Jr., 129 reels from Hamburg; E. Dietzgen & Co., 52 cs. from Hamburg and 32 cs. Rotterdam; Keuffel & Esser Co., 26 cs. and 157 rolls from Hamburg; Hoboken Trust Co., 4 cs. from Bremen; C. Steiner, 41 cs. from Rotterdam; Perkins-Goodwin Co., 661 reels from Bremen and 633 rolls from Hamburg; Bank of Montreal, 3,186 rolls from Corner Brook; Guaranty Trust Co., 661 rolls from Oslo; Hudson Trading Co., 12 rolls from Oslo; J. J. Bernitz, 69 bls. from Hamburg; Gilman Paper Co., 650 reels from Gothenburg; Ossian Ray, 200 reels from Gothenburg; H. Reeve Angel & Co., 87 cs. from Bremen; Judson Freight Forwarding Co., 12 bls. from Bremen; Walker Goulard Plehn Co., 31 cs. from Bremen; Martin & Bechtold, 29 cs. from Bremen; P. Puttmann, 21 cs. from Antwerp; Order, 22 bls. from Gothenburg, 1,213 reels, 59 cs. and 190 bls. Bremen, 388 reels Kotka, 25 bls. and 600 rolls Hamburg, 54 bls. Rotterdam, and 644 reels Norrkoping.

Wrapping—J. H. Schroeder Banking Corp., 111 cs. from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 18 bls. from Glasgow; Steffen, Jones & Co., 8 cs. from Antwerp; D. S. Walton & Co., 385 rolls and 42 bls. from Gothenburg; Wilkinson Bros. & Co., 98 bls. and 828 rolls from Gothenburg; Haas Bros., 9 rolls and 142 bls. from Gothenburg; C. K. MacAlpine & Co., 115 reels from Gothenburg; Arkell Safety Bag Co., 451 rolls from Gothenburg; W. Schall & Co., 50 bls. from Antwerp; C. G. Winans Co., 717 rolls and 20 bls. from Gothenburg; Crepe Kraft Co., 58 reels and 5 bls. from Gothenburg; C. Steiner, 36 bls. from Hamburg; Standard Products Corp., 30 rolls from Antwerp; Birn & Wachenheim, 109 cs. from Antwerp; Insight Paper Co., 454 reels from Oslo; Order, 4 bls. from Gothenburg.

Cigarette—Standard Products Corp., 519 cs. from Havre and 2 cs, Antwerp; Gulbont Freres & Co., 7 cs. from Southampton; P. J. Schweitzer, Inc., 28 cs. from Havre and 300 cs. Marseilles; British-American Tobacco Co., 127 cs. from Southampton; Amer-

MITTS & MERRILL

Conveyor or Gravity Feed Shredder

Give Beaters a Lift

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street **Saginaw, Mich.**

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

See pages 364 and 365 in the 1928 Paper and Pulp Mill Catalogue

What About That New Machine?

Start It Right

Equip It With Rubber Covered Rolls
and "TANNITE" Deckle Straps

Mfd. By

STOWE & WOODWARD COMPANY
NEWTON UPPER FALLS, MASS.

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE CORPORATION, BELLEVILLE N.J. U.S.A.

FELTS for FLOORING and ROOFING

SPEED

LONG LIFE

SATISFACTION

THE WATERBURY FELT COMPANY
SKANEATELES FALLS, N. Y.
Felts and Jackets—That Serve and Satisfy

BOLTON QUALITY

JOHN W. BOLTON & SONS, INC.
Eagle Knife & Bar Works
LAWRENCE, MASS.

The only firm making KNIVES for every machine
from wood pile to finishing room.

HIGH GRADE KNIVES, BARS, PLATES AND JORDAN FILLINGS
ALL GRADES STEEL OR BRONZE KNIVES
IT'S the KNIVES that do the work!

ican Tobacco Co., 1,000 cs. from Bordeaux; DeManduit Paper Corp., 868 cs. from St. Mazaire and 638 cs. Havre; M. Spiegel & Sons, 15 bls. from Genoa; Suarez & Crespo, 6 cs. from Alicante; Gluckmann & Stavich, 2 cs. from Havre; Southern Pacific Co., 3 cs. from Havre.

Writing—Guibont Freres & Co., 9 cs. from Havre; F. L. Kraemer & Co., 6 cs. from London; W. J. Byrnes & Co., 2 cs. from Southampton; Distinctive Writing Paper Co., 7 cs. from Havre.

Drawing—H. Reeve Angel & Co., 15 cs. from London; Devoe & Raynolds Co., 2 cs. from London; Keuffel & Esser Co., 5 cs. from London, 68 cs. Hamburg and 3 cs. Southampton; International Forwarding Co., 42 cs. from Antwerp; Medo Photo Supply Co., 7 cs. from London; Order, 7 cs. from Hamburg.

Filter—A. Giese & Son, 8 cs. from Hamburg; H. Reeve Angel & Co., 28 cs. from London and 11 cs. Southampton; C. Sleicher & Scholl Co., 18 cs. from Hamburg.

Tissue—Milton Snedeker Corp., 9 cs. from Hamburg; Schenkers, Inc., 208 cs. from Hamburg; F. B. Vandegrift & Co., 27 cs. from Liverpool; D. C. Andrews & Co., 15 cs. from Liverpool; Meadows, Wye & Co., 3 cs. from Liverpool; Order, 10 cs. from Genoa and 19 cs. Hamburg.

Hanging—A. C. Dodman Jr., Inc., 119 bls. from Southampton, 235 bls. Liverpool and 7 bls. Bremen; W. H. S. Lloyd & Co., 19 cs. from London and 13 cs. Southampton; F. J. Emmerich & Co., 101 bls. from Liverpool, 159 bls. Hamburg and 2 bls. Havre; C. A. Haynes & Co., 27 bls. from Liverpool, and 18 bls. London; F. A. Binder, 6 bls. from Bremen; R. F. Downing & Co., 7 bls. from London; Hudson Forwarding & Shipping Co., 3 cs. from Southampton; G. J. Hunken & Co., 3 cs. from Bremen; Heemsoth & Basse, 3 bls. from Bremen; J. E. Bernard & Co., 34 bls. from Hamburg; Order, 34 cs. from Antwerp.

Photo—Globe Shipping Co., 316 cs. from Bremen; J. H. Schroeder Banking Corp., 95 cs. from Bremen; Gevaert Co. of America, 202 cs. from Antwerp and 26 cs. Rotterdam; J. J. Gavin & Co., 8 cs. from Liverpool; Guaranty Trust Co., 15 cs. from Hamburg; P. C. Zuhlke, 47 cs. from Antwerp; Order, 52 cs. from Hamburg.

Board—Block Freres & Co., 3 cs. from Southampton; Coty, Inc., 198 cs. from Havre; American Express Co., 426 cs. from Hamburg; C. H. Powell & Co., 212 reels from Rotterdam; Adrian Vuyck, 530 reels from Rotterdam; Bank of America, 2 cs. from Southampton; Perkins-Goodwin Co., 478 rolls from Rotterdam; New York Corrugated Case Co., 94 reels from Rotterdam; Lagerloef Trading Co., 99 bls. from Hamburg; C. K. MacAlpine & Co., 28 bls. from Gothenburg; J. A. Raber, 5 bls. from Gothenburg; Chatham & Phenix National Bank, 43 bls. from Gothenburg; Bourjois, Inc., 17 cs. from Havre; H. H. Ayer, Inc., 11 cs. from Havre; Order, 177 bls. from Hamburg.

Miscellaneous—S. Gilbert, 147 cs. from Bremen; Hensel, Bruckman & Lorbacher, 51 cs. from Bremen and 2 cs. Havre; Borden & Riley Paper Co., 12 cs. from Antwerp; G. W. Sheldon & Co., 2 cs. from Hamburg, 40 cs. Havre, 11 cs. London, 14 cs. Rotterdam and 3 cs. Bremen; Whiting-Patterson Co., 17 cs. from Southampton, 6 cs. Havre and 6 cs. Rotterdam; Hurley Johnson & Co., 26 bls. from Liverpool; American Express Co., 4 cs. from Havre and 33 cs. Hamburg; Keller-Dorian Paper Co., 107 cs. from Havre; American Exchange Irving Trust Co., 24 cs. from Havre; Van Oppen & Co., 5 pkgs. from Havre; Atlantic Forwarding Co., 8 cs. from Hamburg; B. F. Drakenfeld & Co., 79 cs. from Liverpool; E. Dietzgen & Co., 98 cs. from Hamburg and 30 cs. Rotterdam; International Forwarding Co., 45 cs. from Hamburg, 74 cs. Rotterdam and 31 cs. Antwerp; Quality Art Novelty Co., 12 cs. from Hamburg; Globe Shipping Co., 41 bls. from Hamburg, 10 cs. Havre, 2 cs. Southampton, 82 cs. Rotterdam and 44 cs. Bremen; Bendix Paper Co., 27 cs. from Hamburg and 4 cs. Bremen; Stern, Stiner & Co., 9 cs. from Hamburg; P. H. Petry & Co., 9 cs. from Hamburg, 9 cs. Rotterdam and 4 cs. Bremen; J. J. Gavin & Co., 13 cs. from Hamburg; J. Beckhardt & Co., 35 cs. from Bremen and 6 cs. Rotterdam; H. D. Catty & Co., 2 cs. from Havre; Canson & Montgolfer, 9 cs. from Havre; S. H. Pomerance, 3 cs. from Havre; P. Puttmann, 4 cs. from Havre; Phoenix Shipping Co., 15 cs. from Rotterdam; C. Von Der Bruck, 360 cs. from Bremen; Titan Shipping Co., 3 cs. from Southampton; F. Murray Hill, Inc., 5 cs. from Bremen; W. L. Haas, 14 cs. from Rotterdam; Richard Shipping Co., 9 cs. from Bremen; Universal Carloading & Distributing Co., 6 cs. from Bremen; Draeger Shipping Co., 3 cs. from Bremen; Steiner Paper Corp., 69 cs. from Rotterdam; F. L. Kraemer & Co., 6 cs. from Rotterdam, 7 cs. London and 7 cs. Bremen; Brown Bros. & Co., 4 cs. from Hamburg; Fuchs & Lang Mfg. Co., 25 cs. from Canton; Japan Paper Co., 18 cs. from Genoa and 2 cs. Southampton; C. Kofler & Co., 4 cs. from Antwerp; Heemsoth & Basse, 6 cs. from Bremen; Coenca-Morrison Co., 3 cs. from Havre; Dingelstedt & Co., 8 cs. from Bremen; R. F. Downing & Co., 3 cs. from Havre; W. R. Noe & Sons, 4 cs. from Havre; Abraham & Straus, 5 cs. from Havre; Gallagher & Ascher, 2 cs. from Southampton; B. Altman & Co., 2 cs. from Southampton; H. Reeve Angel & Co., 2 cs. from London; Central Union Trust Co., 84 cs. from Hamburg; Judson Freight Forwarding Co., 8 cs. from Southampton; J. Henchel & Co., 4 cs. from Hamburg.

Biggs Has Satisfactory Year

The Biggs Boiler Works Company, Akron, Ohio, has drawn a most satisfactory volume of business from the paper industry during the year 1928. This company has just received an order for two additional rotary bleaching boilers from the River Raisin Paper Company, Monroe, Mich., making a total of ten 14 ft. bleaching boilers to be ordered for this plant.

Its new process of welding has been developed by the Biggs Boiler Works Company to the extent that it is now constructing heavy welded digesters and rotary bleaching boilers by the electric welded process. There are eight special 14 ft. diameter machines in production at present.

1 Heavier Furnishes
2 Faster Beating
3 Greater Output
4 More Uniform Product
5 Saving in Power
6 Saving in Labor

Not One—
But all Six

The acceptance of Dayton High Speed equipment—either new or holland engines reconstructed into Daytons—is based upon all six of the above advantages and not upon "speed" alone. Superintendents in mills that use them will tell you so. Write some of them. A list of the mills will be furnished for that purpose.

Also get the series of analytical surveys recently prepared by A. C. Nielsen Company, of Chicago. These surveys will give you exact facts, figures and percentages on what Daytons are doing in several mills. Write for them.

DAYTON
High Speed Beaters

The Dayton Beater & Hoist Co.,
Dayton, Ohio

E. K. Mansfield & Co.,
501 5th Ave., New York, N. Y., Eastern Reps.

TRADE MARK

B

Registered

DIAMOND B SPLICING TISSUE

HIGHEST QUALITY

SPECIALLY MADE FOR THE PAPER TRADE

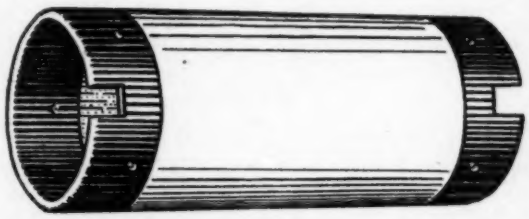
PRICES ON APPLICATION

BEMIS ASSOCIATES INC.

WATERTOWN, MASS.

ELIXMAN PAPER CORE CO., INC.

Corinth, N. Y. U. S. A.



Canadian Elixman Co., Ltd., Hamilton, Ontario

Ham Feltz says:

"I ain't what you'd call a learned guy, but it's a been my observin' that when a guy thinks of but one thing for a long time he gets to know that thing just about 100 per cent. Same way in felts. The fellows that make these here Hamilton Felts have been thinking felts gosh darn on to 70 years. And old Ham Feltz says that they're some felts."

Hamilton Felts

YES he's knocked out by falling pulp !!

National Safety Council
168 East Ohio Street,
Chicago, Illinois.

Please send me without obligation, information on how I can reduce accidents in my organization.

Company .....

Street .....

State .....

Your Name .....

You, too, can reduce *Your* ACCIDENTS

OVER 4,300 American companies have reduced their accidents even as much as 90 percent through the services of the National Safety Council—the only non-profit national accident prevention organization for industry. This accident prevention service, developed by foremost safety engineers, is complete. It has saved Council members millions of dollars. At a low price, you too can get the assistance in Safety work that your company needs.

You, as a member of the National Safety Council, will receive each month a selection of forty two-color accident prevention posters—strikingly illustrated. This is a definitely planned program to educate your workmen in Safe Practices—to reduce your accident costs. A sample poster in miniature is shown at left.

The National Safety News, an eighty-page magazine, will be sent to you each month. You will find its articles practical—inspiring—of real service.

In addition, you will be privileged to call upon the Council's staff of trained Safety engineers, editors, and librarians for information and advice on your accident prevention problems. At your disposal is the Council Library—the most comprehensive collection of safety knowledge in existence.

Investigate the services of the National Safety Council—only partly covered in the foregoing paragraphs. Kimberly Clark, Long Bell Lumber Company, and hundreds of other small and large companies use it profitably. Why not you? Return the coupon for full information.

Market Quotations

(*Continued from page 1675*)

Wm. Whitmer Parsons Pulp & Lumber Co. Cons. 8s	22	25
Waterway Paper Products 6s	101	
Stocks		
American Book Co. Common	133	135
American Sales Book Common	105	
American Sales Book Preferred	121	
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Preferred	90	
Brown Co. Preferred	95	97
Bryant Paper Co. Common	7	10
Belgo Canadian Paper Co. Preferred	95	97
British Columbia Pulp & Paper Common	7	9
British Columbia Pulp & Paper Pfd.	70	
Canada Paperboard Co. Preferred	90	94
Champion Fibre Co. Preferred	105	
Champion Coated Paper Co. Preferred	105	107
Chemical Paper Co. 1st Preferred	90	
De Jonge (Louis) Preferred	95½	96½
Dryden Paper Co. Preferred	38	41
Diem & Wing Preferred	92	95
Downington Paper Co. Preferred	103	
Downington Paper Co. Common	93	
Eddy Paper Co. Common	30	
Escanaba Paper Co. "B" Preferred	42	
Escanaba Paper Co. Common	3	
Glatfelter Paper Common	101	
Great Northern Paper Co. Common	63	65
Gair (Robt.) Co. Preferred	38	39
Gair (Robt.) Co. Common	10	13
Hawley Paper Co. Preferred	96	
Hammermill Paper Co. Preferred	109	110½
Holyoke Card & Paper Co. Preferred	170	
Hinde & Dausch Paper Co. Preferred	101	103
Hinde & Dausch Paper Co. Common	25	28
International Pulp Co. Preferred	75	
International Textbook Co.	17	19
Jessup & Moore Paper 1st Preferred	27	31
Jessup & Moore Paper Common	4	10
Keyes Fibre Co. Common "A"	43	45
Marathon Paper Mills Common	125	
Marathon Paper Mills Preferred	170	
Mead Pulp & Paper Co. Common	68	72
Minnesota & Ontario Paper Co. Preferred	70	75
Mississippi Pulp & Paper Preferred	90	95
Munising Paper Co. Common	22	25
Munising Paper Co. Preferred	83	87
Northern Paper Mills	30	32
National Paper & Type Preferred	75	80
Orono Pulp & Paper Common	40	45
Oglesby Paper Co. Preferred	101	
Occident Paper Co. Preferred		15
Oxford Paper Co. Preferred	109½	110½
Oxford Paper Co. Common	185	195
Parker Young Preferred	89	92
Parker Young Common	25	
Penobscot Chemical Fibre Common	80	
Package Paper & Supply Units	22	
Robertson Paper Co. Preferred	5	
Robertson Paper Co. Common	50c	
River Raisin Paper Co.	7	9
Rogers Paper Co. Common	45	50
St. Regis Paper Preferred	106	108
St. Croix Paper Co. Common	168	
Sutherland Paper Co. Common	23	24
Tait Paper & Color Industries Preferred	OW	90
Tait Paper & Color Industries Common	OW	70
United Wall Paper Preferred	90	95
United Paperboard Co. Preferred	63	
West Virginia Pulp & Paper Preferred	101	103
West Virginia Pulp & Paper Common	53	55
West Virginia Timber Co. Preferred	90	94
Westfield River Paper Co. Preferred	85	95

Foote Bros. Acquire New Interests

Foote Bros. Gear & Machine Co., Chicago, has acquired an interest in four well-known manufacturing companies, specializing in the manufacture of highway and road building equipment, namely: Lyle Culvert & Road Equipment Co., Stockland Road Machinery Co., Northwestern Steel & Iron Corp., all of Minneapolis, Minn., and Bates Manufacturing Co., of Joliet, Ill.

This acquisition necessitated an increase in capitalization of Foote Bros. Company to 250,000 shares of common stock, which together with the 8,000 shares of preferred stock originally issued, represents a market value of capitalization of approximately $10,000,000 and establishes their position as one of the very large manufacturing institutions of this country.

Besides providing funds for the acquisition of the interests in the four companies above mentioned, the increase in capitalization gives to Foote Bros. $1,250,000 new cash capital which will be used for additional expansion.

These

Three Vortex Features

Make a

Perfect Painting Program

As Fine a Paint as Obtainable—Vorcolite

Vorcolite is a fine, full bodied oil paint, specially compounded for gun application over large inside surfaces. Richly pigmented, it has an unusually great light diffusing value. When applied by the Vortex Painting Equipment, Vorcolite gives a finished job in a single application.

The Vortex Painting Equipment

Loaned to You Without Cost

The Vortex Painting Equipment is an exclusive device for the rapid painting of large areas. With it, semi-skilled labor on your own payroll does a splendid job with a minimum of disturbance to factory routine. Interchangeable extension arms—reaching ordinary ceiling heights—eliminate considerable and often all scaffolding. Special features of the nozzle prevent clogging and spray losses, assuring extraordinary speed and economy. The Vortex Equipment cuts painting costs far below any other method of application.

A Complete Plan Furnished You

Painting worries are no longer *your* worries when you use the Vortex Method. We will submit a complete plan, founded on years of experience, that is fitted to your own particular painting problem. It will show you where to start, how to organize your crew and the proper methods of procedure to insure speedy coverage with unapproachable economy. Mail the coupon today. We will be glad to send a factory representative direct to your plant to go over your needs with you.

***the* VORTEX PAINTING METHOD**

THE VORTEX MANUFACTURING CO.

1981 West 77th Street .. .. Cleveland, Ohio

THE VORTEX MANUFACTURING CO.
1981 West 77th Street • Cleveland, Ohio

We are considering an inside _____ outside _____ job to do approximately _____ sq. ft. Send your large area specialist to look it over and to tell us how to handle it from start to finish in the most practical and least costly way.

Company _____

Address _____

Attention _____

V-21

The Hercules Jordan Sustains a New Standard of Efficiency

Maximum production over a longer period of uninterrupted service with less consumption of power, and little attention.

THE Hercules Jordan has so many distinctive advantages, it will pay to wire for our illustrated folder which tells the story in detail. Frictionless Timken Tapered Roller Bearings are a standard equipment. This gives assurance of a permanently centered plug and uniform stock throughout the life of Plug and Shell Liners. Longer life and quicker change features are added points of economy.

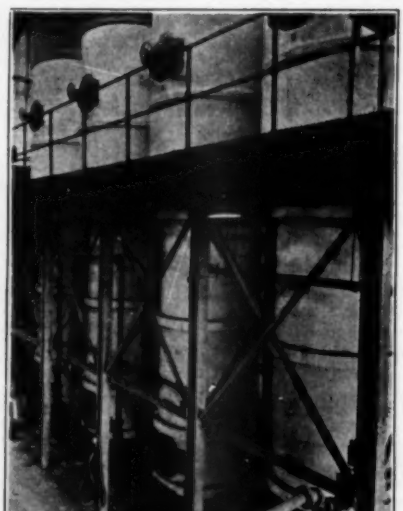
Our Engineering Department Is At Your Service

The HERMANN MANUFACTURING Co.

Factory and General Offices: LANCASTER, OHIO

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
FIBRE CO.
Canton, N. C.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue

Paperboard Industries Annual Meeting

The Paperboard Industries Association held its annual meeting at the Waldorf-Astoria Hotel, New York City, November 22nd, 1928. At this meeting and at the Group Meetings held on the 21st and 22nd, the following officers were elected for the ensuing year: President and chairman of the Executive Committee, John J. Brossard, Fort Wayne Corrugated Paper Co., Menasha, Wis.; vice president Container Group, H. C. Krannert, Inland Box Corp., Indianapolis, Ind.; vice president Folding Box Group, H. H. Stonebarger, Globe Folding Box Co., Cincinnati, Ohio.

The meeting endorsed certain proposed standards for buying and selling, as recommended by the National Association of Purchasing Agents for general adoption by all branches of the industry.

The association also adopted a resolution as favoring the principle of calendar simplification and ruled that a copy of the resolution be transmitted to the National Committee on Calendar Simplification for the United States.

Recommendations on Trade Practices Completed

The list of trade practices submitted to the Federal Trade Commission were accepted almost unanimously by the industry except resolutions No. 5, relative to "Price Discrimination", and No. 14, relating to "Sales Below Cost". For the purpose of redrafting these two resolutions a meeting of the Special Committee was held in New York City, November 20th. Following this committee's report, the meeting voted to submit the new forms of resolutions Nos. 5 and 14 to the Commission for formal adoption.

At the group meetings held November 21st and 22nd, various subjects of interest to each group were discussed, such as uniform rates of depreciation, statistics, inspection, how to increase membership and attendance, and the members of each group were presented with maps showing the location of mills coming under the respective groups.

The next meeting of the association will be held in Chicago, January 23 and 24, 1929.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 34277—Paper bags for cement. Johannesburg, South Africa. Purchase and agency desired.

No. 34332—Paper napkins, plain, white and fancy, or stamped. Rome, Italy. Purchase and agency desired.

No. 32495—Cup making machine for making paper cups. Hong Kong, China. Purchase desired.

No. 34240—Wallpapers. Liverpool, England. Purchase and agency desired.

No. 34433—Blue-print paper, drawing and tracing paper, and tracing cloth. Chihuahua, Mexico. Purchase and agency desired.

No. 34431—Paper boxes, cheap grade, for packing candies. Nacozari, Mexico. Purchase desired.

No. 34432—Paper cups. Hong Kong, China. Purchase desired.

No. 34434—Paper cups and containers. Djursholm, Sweden. Agency desired.

No. 34435—Paper table napkins. Glasgow, Scotland. Agency desired.

No. 34407—Newsprint paper, and wall paper. Montevideo, Uruguay. Agency desired.

No. 34388—Rosin. Bucharest, Rumania. Agency desired.

No. 34523—Rosin. Hamburg, Germany. Agency desired.

No. 34430—Paper bottle cap manufacturing machinery. Bielsko, Poland. Purchase and agency desired.

No. 34436—Paper cup manufacturing machines for manufacturing drinking cups. Leipzig, Germany. Agency desired.

Prime Favorites
For Low Pressure Lines

LUNKENHEIMER
"CLIP" GATE VALVES

are favorites of long standing among valve users everywhere, for the control of steam, water, oil, etc., at pressures up to 100 pounds.

The steel clip surrounding the body rigidly secures the bonnet, lends strength to the body, and facilitates quick disassembling for inspection and cleaning.

Disc is double seated and is sharply tapered, making the valve particularly adaptable for handling heavily impregnated fluids.

The valve is very compact with unusually short face to face dimensions, permitting installation in places where space is limited.

Also procurable with lever for Quick Operating Purposes, and in the All-Iron Pattern for handling solutions which attack bronze but not iron.

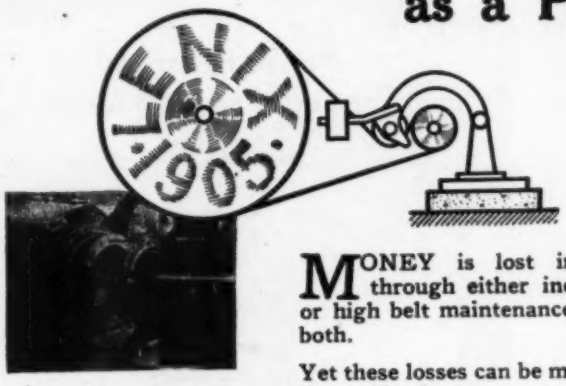
Lunkenheimer Distributors, located in all industrial centers, carry complete stocks and will fill your requirements promptly.

Lunkenheimer "Clip" Gate Valves are illustrated and described in Booklet F. 505. A copy will be sent upon request.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON PHILADELPHIA
PITTSBURGH SAN FRANCISCO LONDON
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

5-39-67

Look to the Drives as a Place to Lower Costs



Double headed motor driving two beaters by means of the LENIX Drive.

MONEY is lost in drives through either inefficiency or high belt maintenance. Often both.

Yet these losses can be minimized if not wiped out.

The carefully computed and applied short center belt drive——the LENIX—lowers costs by providing the proper amount of added belt-pulley contact. It eliminates belt slippage. It maintains the proper belt tension, even under fluctuating loads.

Try the LENIX in your plant—say on a beater then watch the results.

For the specific LENIX needed for that beater, send us the full details for our recommendation.

F. L. SMIDTH & CO.

Engineers Incorporated 1895
225 Broadway, New York, N. Y.

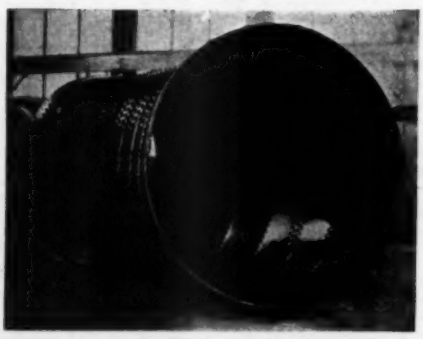
The LENIX *Drive*

(Trademark Reg.)

For Every Heavy Steel Plate Requirement

Let your experience with Biggs Rotaries and Digesters introduce you to this same dependable source of supply for all the other heavy steel plate equipment you use about the mill.

Biggs has been fabricating steel pipe, penstocks, stacks and general steel plate work



for more than 40 years, with the same accuracy and satisfactory performance that has characterized its specialized paper mill equipment.

Our interesting literature, showing typical special jobs, is yours on request. Why not ask for it today?

THE BIGGS BOILER WORKS COMPANY

General Offices and Works: Akron, Ohio

Eastern Sales Office: 300 Madison Ave., New York City
Western Sales Office: 35 South Dearborn St., Chicago

The Biggs Boiler Works Co. Akron Ohio

Trade Mark Registered

TANKS AND GENERAL
STEEL PLATE WORK